FILE COPY

1920

IN THE

Supreme Court of the United States

ORIGINAL. No. [redacted]

THE STATE OF NEW MEXICO

v.

THE STATE OF COLORADO

ANSWER AND CROSS BILL OF THE STATE OF COLORADO TO THE BILL OF COMPLAINT.

VICTOR E. KEYES,
Attorney General of Colorado
WILLIAM R. RAMSEY,
Assistant Attorney General
CHARLES ROACH,
Deputy Attorney General

[redacted] CARPENTER,
Of Counsel.

Eastwood Printing Co., 1537 Champa Street, Denver.

IN THE SUPREME COURT OF THE UNITED STATES

ORIGINAL, NO. 25.

THE STATE OF NEW MEXICO

vs.

THE STATE OF COLORADO

To the Honorables, the Chief Justice and Associate Justices of the Supreme Court of the United States:

The Answer and Cross Bill of the State of Colorado to the Bill of Complaint of the State of New Mexico.

And now comes the State of Colorado, the defendant, and for answer to said bill, says:

I

This defendant admits that the ground upon which the Court's jurisdiction of the matters set forth in the bill of complaint depends, is that the said bill sets out a controversy between two states of which this Court has original jurisdiction.

II

This defendant admits that by the legislation of Congress, and by the Constitution of the State of New Mexico under which the said State was admitted into the Union of States, the northern boundary line thereof extends along the 37th parallel of North latitude from the intersection of said parallel with the 32nd meridian of longitude West from Washington in an easterly direction to the point where said parallel of latitude intersects the 103rd meridian of longitude West from Greenwich, and avers that the State of New Mexico was admitted into the Union of States on the 5th day of January, 1912.

III

This defendant admits that on the 7th day of July, 1902, Howard B. Carpenter, a United States Surveyor, entered into a contract with the United States to re-survey, re-establish and re-mark the boundary line between Colorado and the Territories of New Mexico and Oklahoma, and that in pursuance of said contract the said Carpenter did thereafter proceed to re-survey, re-establish and re-mark the said boundary line as is shown by the record and field notes of his work, and admits that said field notes were approved by the then Commissioner of the General Land Office; but defendant avers that said Carpenter survey and his field notes of the said boundary line were never confirmed by the Congress of the United States, nor by either the State of

Colorado, or the Territory or State of New Mexico, but that, on the contrary, an effort was made to confirm the said Carpenter survey in the first session of the 60th Congress, by the introduction in the Senate of Senate Joint Resolution No. 78, which passed the Senate and the House of Representatives, and was submitted to the President for his approval, and that the said Joint Resolution was on the 19th day of December, 1908, upon the advice of the Attorney General of the United States, disapproved by the President and returned to the Senate with his objections thereto, which Resolution, upon the same day, was laid upon the table by the Senate, and no further action has since been taken thereon by Congress, and the said Carpenter survey, and boundary line as shown by said field notes, failed to become effective in any respect and was never recognized by the General Land Office of the United States as the boundary line between Colorado and New Mexico. A copy of said veto message of the President is hereto attached and made a part hereof.

IV

This defendant denies that the line surveyed and established by the said Carpenter, as shown by his field notes, is the true or correct boundary line between the said two states; admits that in disregard of said Carpenter line it has exercised jurisdiction over a considerable amount of territory South of said Carpenter line, and has levied and collected taxes upon property South of said line, and through its Courts, has exercised both civil and criminal jurisdiction over persons and property lying South of said line, but denies that said acts, doings, pretenses or claims of the State of Colorado, or any of the same, are contrary to equity or good conscience or tend to the manifest or any wrong, injury or oppression of the State of New Mexico, or of its citizens or owners of property within its boundaries, or that said acts or any thereof were or are unlawful or in usurpation of the jurisdiction, rights or authority of said State of New Mexico.

V

For further defense to said bill of complaint, this defendant avers that in the Act of Congress, approved March 3rd, 1875, to enable the People of Colorado to form a Constitution and State government, and be admitted into the Union, (18 Statutes at Large, 474), and also by the Constitution adopted by the vote of the People of Colorado, and under which the State of Colorado was admitted into the Union by Proclamation of President Grant, August 1st, 1876, the 37th parallel of North latitude between the 25th and 32nd meridians of longitude West from Washington, was fixed as the southern boundary line of that State; that pursuant to authority of an Act of Congress, approved March 2nd, 1867, (14 Statutes at Large, 466), Ehud N. Darling, United

States Surveyor and Astronomer, by the most approved methods of the time, surveyed and established in the year 1868, the 37th parallel of North latitude so far as it constituted the boundary line between the Territories of Colorado and New Mexico, and marked the same upon the earth's surface by mile corners and monuments, a copy of which survey together with the field notes of his work is attached hereto and made a part hereof, which field notes of said survey were examined and approved on the 30th day of April, 1869, by the Honorable Joseph S. Wilson, Commissioner of the General Land Office, as appears by his certificate to that effect attached to said field notes.

Defendant avers that for more than thirty (30) years, the position of the said Darling line remained undisputed, and the correctness of its technical execution unquestioned, and as so established the said Darling line has been generally recognized and acquiesced in by both of the States herein involved, and accepted by the Federal government, and is now recognized and accepted by the Federal government as the true and subsisting boundary line between Colorado and New Mexico; and by reason of the right and title acquired as hereinbefore set forth, this defendant from the time said boundary was so established in 1868 to the present time, has held lawful and rightful possession of and exercised dominion and sovereignty, and now claims the same, over the territory down to the said southern boundary line as established by the said Darling, and no farther; county lines have been formed, towns and settlements have grown up, school districts, election districts, voting precincts, land districts and water districts have been created with reference to said line, public officers have been elected, property has been assessed, taxes levied and collected under the authority of the State of Colorado and its courts of both civil and criminal jurisdiction have exercised unquestioned jurisdiction in all places North of said boundary line, and the State of New Mexico has exercised like jurisdiction in all places South of said line. County maps, State maps and maps prepared by the Federal government have for more than forty years last past delimitated said boundary according to said Darling survey, and government post offices have been established as being in Colorado when above said line, and in New Mexico when below said line, and public land surveys on both sides of said line were closed thereon, lands have been disposed of, rights acquired and political boundaries in both Colorado and New Mexico fixed by reference to said line.

The 37th parallel of North latitude, as established by Howard B. Carpenter, passes through several towns lying wholly within the State of Colorado, according to the boundary as originally surveyed by Darling, and along the entire line there is a material, and in many places, excessive variance between the lines of the two surveys, and the effect of said Carpenter survey if declared the

true boundary line would be to remove a considerable strip of territory which is now within the State of Colorado, according to the Darling survey, and place it in the State of New Mexico.

The stone monument established by Capt. Macomb U. S. A. of the Topographical Bureau in 1858, under direction of the War Department, marking the intersection of the 37th. parallel of North Latitude with 103° of West Longitude from Greenwich, adopted as the initial point of the Darling Survey, was designated as the northwest corner of Indian Territory, now State of Oklahoma, in 1874 by John J. Major, U. S. Surveyor and Astronomer, in the survey and marking of the boundary between Indian Territory and Colorado Territory. The line attempted to be established by said Carpenter passed 93 lks. south of said Macomb monument and departed from the boundary lines established by both Darling and Major, and said Carpenter obliterated the marks upon said Macomb monument, theretofore and since hitherto recognized as the corner upon the south line of Colorado and common to the States of New Mexico and Oklahoma, and attempted to relocate said common corner at a point about two miles easterly from said long established and accepted Macomb monument.

The said Carpenter survey consisted of a new fixation of the 37th parallel of North latitude independent of the line established by Darling in 1868, and not only failed of confirmation by Congress, but the Federal government up to the present time has declined to recognize the said Carpenter survey as the true boundary line between the said two states, and on the contrary has accepted and still accepts the said Darling survey as the true and correct boundary line between said two states.

All of which matters and things as hereinbefore stated, this defendant avers to be true and this defendant pleads the same in bar to the bill of complaint, and prays the judgment of the Court whether it shall further answer said bill.

Wherefore, having answered fully all the matters in plaintiff's bill set forth, defendant prays this Honorable Court that the prayer thereof be not granted, but that the Court decree that the boundary line between the State of New Mexico and the State of Colorado be, in accordance with said Darling survey, the true boundary line between the said two states, and that the said bill be dismissed and the defendant go hence with its costs in this behalf incurred, and that this defendant have such other and further relief as may be found necessary and as to the Court shall seem meet and proper.

CROSS BILL.

And now by way of cross complaint and for affirmative relief against the plaintiff, your orator, the State of Colorado, shows to

the Honorables, the Chief Justice and Associate Justices of the Supreme Court of the United States:

That the true boundary line between plaintiff and defendant is described in the foregoing answer and is fully and correctly shown and delineated in the field notes and survey made in 1868, by Ehud N. Darling, attached hereto and made a part of this cross bill, as well as a part of said answer, and for this cross bill defendant adopts the allegations of fact contained in the foregoing answer and makes the same a part of this cross bill, as fully and to all intents and purposes as if the said allegations were set out in detail in this cross bill; and defendant further avers the said Carpenter in making his said survey destroyed and obliterated many of the monuments and corners established by said Darling in making his said survey.

Wherefore, your orator, to the end that it may obtain the relief to which it is justly entitled, and avoid future controversies in reference hereto, prays the Court to grant unto your orator such process of this Honorable Court as may be appropriate to require the plaintiff, the State of New Mexico to appear and answer (not under oath, answer under oath being hereby expressly waived) to the several allegations in this cross bill contained; and that upon the final hearing hereof the true southern boundary line of the State of Colorado and the northern boundary line of the State of New Mexico, be declared and decreed by this Court to be the line established as aforesaid by Ehud N. Darling in the year 1868, and as the same is shown by the field notes of his work, attached hereto and made a part hereof, and that the defendant have such other and further relief as may be found necessary in order to correctly restore, re-establish and re-mark said Darling line as the boundary line between the plaintiff and defendant, and as to the Court shall seem meet and proper, and that the defendant have and recover its costs herein incurred.

THE STATE OF COLORADO.

By

VICTOR E. KEYES,
Its Attorney General,

WILLIAM R. RAMSEY,
Assistant Attorney General.

CHARLES ROACH,
Deputy Attorney General.

DELPH E. CARPENTER,
Of Counsel.

VETO MESSAGE
OF PRESIDENT ROOSEVELT
IN RE: COLORADO BOUNDARY LINE

December 19, 1908.

To the Senate:

I return herewith, without approval, Senate joint resolution No. 78, "Establishing the boundary line between the States of Colorado and Oklahoma and the Territory of New Mexico", for the reasons set forth in the following communication of the Attorney-General:

"I have the honor to report, with respect to joint resolution S. R. 78, referred by you to this department, that the purpose of the said resolution appears to be to correct the boundary line between the Territory of New Mexico and the States of Colorado and Oklahoma. The practical effect of establishing the new boundary line, so far as the State of Colorado is concerned, would be to remove from the jurisdiction of that State and add to the Territory of New Mexico a strip along nearly the whole of the southern boundary of the said State, in which there are located at least five post-offices and an appreciable number of inhabitants. So far as I am aware no action has been taken by the legislature of the State of Colorado assenting to or accepting the location of the boundary as proposed in this resolution, and from such inquiry as I have been able to make in the very limited time since the resolution reached me, I am led to think that such assent or acceptance on the part of the State is improbable. Under these circumstances, I think it is of very doubtful expediency to have the line mentioned in the resolution accepted by the United States as the true boundary. It is not necessary to express an opinion as to the legal effect of such a resolution upon the rights of the United States or of the Territory of New Mexico or the duties of federal or territorial officers; but it is clear that the resolution would not be binding upon the State of Colorado, and its adoption might lead to conflicts of jurisdiction within the long strip of territory to which I have referred, and possibly to the escape from legal punishment of those guilty of crimes committed within the said strip. If it is deemed desirable to establish the true boundary line, an appropriate method to effect this would be to invoke, by appropriate proceedings, the original jurisdiction of the Supreme Court."

"I therefore respectfully advise that the joint resolution in question do not receive your signature."

THEODORE ROOSEVELT.

The White House, December 19, 1908.

Field notes of the survey of the 37th Parallel of North Latitude, so far as it constitutes the North boundary of New Mexico, commencing at the 103° and terminating at the 109° of West Longitude from Greenwich, by

EHUD N. DARLING

Surveyor and Astronomer.

Under His Contract, Dated May 22nd, 1868.

NAMES OF ASSISTANTS

JNO. E. McMANUS NORTH A. HAIGHT	Chairmen
ROBERT DARLING SAMUEL MEYERS OTTO MANGOLD	Cornermen
JOEL B. DURNALL JOHN E. JONES	Flagmen

J. WEISSNER, Astronomer

ALONZO MACE, Asst. Astronomer

Commenced July 19, 1868

Completed November 18, 1868

Standard chain compared with standard measure at Surveyor General's Office, Leavenworth, Kansas, June 18, 1868.

Measuring Chain compared with standard and found correct.

CHAINS

A transit of Troughton & Syms manufacture, London England, was used in running the boundary. It having two telescopes one on the upper and one on the lower limb; and asimuth circle with two verniers to 30s with reading microscopes attached, and verticle circle and vernier also reading to 30s. A solar compass of Youngs make Phila, was used in establishing corners. After carefully adjusting my transit in all its parts,—in order to determine the asimuth at the stone monument established by Capt. Macomb, U. S. A. of the Topographical bureau in 1858 under direction of the War Dept. for marking the 103° of West Longitude from Greenwich, I made the following observations on Polaris.

Chrononeter fast on mean solar time. July 19th M.—5h 58′ 56″, with a losing rate of 30s pr day, on mean solar time.

Observations of Polaris. July 19th, 1868, lower transit. Time of observations marked by Chronometer P. M.

	11h. 38″. 30′	
Upper Transit	10 . 56 . 19	
Chronometer interval	11 . 17 . 49	
Correction for Chronometer rate		14.12+
Mean Solar interval		11. 18. 03. 12
Reduction to Sidereal time		1. 51. 38
Sidereal interval		11. 19. 54. 50
		—12.
		40. 05. 5

Computation of error of asimuth.

Δ 20.02.75=1202.75=18041.25″ log.=		4.2562666
2	d cat 88° 36′ .5	8.3877104
	Sec. 37	0.0976514
	a 551″ 60=9′ 11″ .6	2.7504335

Therefore the instrument asmuitheal deviation is 9′ 12″ East. The magnetic variation 12° 36′ East, as read by vernier, true variation 12° 45′ 11″. I therefore turn the upper telescope West 90.09′ .11″, as near as possible, the vernier A. B. reading to 30″.

CHAINS

The cobble stone monument established by Capt. Macomb U. S. A. is 8 feet at base, conical shape, 5 feet high and 2½ feet top. In order to better perpetuate the initial point I set a stone 30x10x8 imbedded 20 in. in monument with 10 in. projecting above same engraved on the SE Ind. T. on the SW -NM- on the NW -Col T.- on the NE 1868 and 103° WL.

From which point a
Conical Peak, bears N 15 W. 8 miles dist.
Point of Bluff bears N 74½ E. 60 chs. dist.
Point of Bluff bears N 80½ E. 45 chs. dist.
Point of Bluff bears S 75½ E. 20 chs. dist.
Point of Bluff bears N 54½ W. 65 chs. dist.
Stone mound is 75 lks. West of Canon, 250 feet deep, bears N N E.

——Thence West on Tangent, on 1st Mile——

Variation 12° 45′ East.

61.50 Top of steep bluff and enter canon 200 feet deep, bears S S E.

80.00 Offset from tangent to Parallel to 1st mile corner. Marked sand stone 15x10x4 : M—and deposited it, 3½ feet in earth. Built conical mound of stone on side hill, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C- NM- 1868- NM- respectively.
No natural objects near.
Surface except canon level.
Soil 3rd rate.

——West on 2nd Mile——

Variation 12° 14′ East.

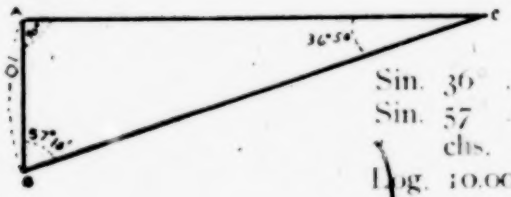
0.60 Top of bluff, bears North and South.

17.50 Canon, 75 feet deep, bears S S E.

23.00 Leave canon, bears S S E.

42.00 To canon, 150 feet deep bears S S E. It being impossible to measure the distance with chain over canon I set flag on line, on West side of canon, thence from point of intersection of canon I formed the right angle, triangle A B C, measured angles A and B A=90 B=57 10, hence the angle C must equal 32° 51′ and the measured side AB=10 chs. Thence we have the formula.

CHAINS



Sin. 36° 50′ =		9.734157
Sin. 57 chs. 10′ =		9.924409
Log. 10.00 chs. =		1.000000
15.50 over canon		1.190252

57.50 Leave canon, bears S. S. E.

68.20 Earthen mound situated on a high level plateau established for the 103° Meridian of West Longitude from Greenwich on the 37th Parallel of North Latitude, in the Survey of the Southern boundary of Kansas in 1857. Mound was found partially destroyed, and apparently had been eight feet in diameter and five feet high. Found near mound a stone marked with a brush in black -NM- -COL- IND TER- 37NL- on the four sides respectfully.

80.00 Offset from tangent to Parallel to 2nd mile corner. Marked stone 10x4x3 -2M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 25x16x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -2M- respectively.
No natural objects near.
Surface nearly level.
Soil 3rd rate.
July 20th. Measuring chain compared with standard and found correct.

——West on 3rd Mile——

Variation 12° 57′ East.

6.00 Canon 70 feet deep, bears SW.

11.50 Leave canon, bears SW.

65.00 Canon 100 feet deep, bears SE.

77.00 Leave canon, bears E. S. E.

80.00 Offset from tangent to Parallel to 3d mile corner. Marked stone 10x6x4 -3M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22x12x10 projecting 8 in. above mound, marked on the North, South, West and East side -C- -NM- 1868- -3M- respectively.
No natural objects near.

CHAINS

Surface broken.
Soil 3d rate.

——West on 4th Mile——

Variation 12° 50′ East.

13.00 Top of Bluff, bears SE

At this point the magnetic variation is 18° East and at a point 4 chs. West, 10° East

35.00 Enter head of canon, 75 feet wide, bears S S W.

38.00 Leave canon, bears S S W.

Variation 8° East.

47.00 Enters canon, bears South.

55.00 Leave canon, 50 feet deep, bears South.

70.00 Offset from tangent to Parallel to 4th mile corner.

Marked stone 8x6x4 -4M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -4M- respectively.

From which point a Hay Stack Peak, bears S 72½ E.

Hay Stack Peak, bears S 64½ W.

Round mound bears S 41 W.

Rabbit Ears mound, bears S 12¼ W.

Large Hill, bears N 71 W.

Prominent point of ridge bears N 42¾ W.

North of this Point is a high plateau.

Surface nearly level, except canons.

Soil 2nd rate.

——West on 5th Mile——

Variation 12° 50′ East.

80.00 Offset from tangent to Parallel to 5th mile corner.

Marked stone 8x4x4 -5M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in deep. Set volcanic stone 20x16x10, projecting 6 in. above mound marked on the North, South, West and East sides -C- -NM- -1868- -5M- respectively.

No natural objects near.

Soil 3rd rate.

Surface gently rolling, high prairie.

CHAINS

——West on 6th Mile——

Variation 10° to 15° East.

80.00 Offset from tangent to Parallel to 6th mile corner. Marked stone 6x6x3 -6M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -6M- respectively.

No natural objects near.

Surface gently rolling.

Soil 2nd rate.

July 21st. Measuring chain compared with standard and found correct.

——West on 7th Mile——

Variation 10° to 15° East.

51.00 Descend into valley of the Cimaron 800 feet below the level of the high prairie and about 2½ miles wide.

The bluffs are composed mainly of detached rock with four distinct formations.

80.00 Offset from tangent to Parallel to 7th mile corner, situated in canon, 700 feet below high Prairie. Marked stone 12x6x3 -7M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set sand stone 28x12x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -7M- respectively.

No natural objects near.

Surface prairie.

Soil 3rd rate.

——West on 8th Mile——

Variation 13° East.

10.00 Enter Cimagon valley, bears South.

80.00 Offset from tangent to Parallel to 8th mile corner. Marked stone 12x8x4 -8M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Sand stone 36x12x6 projecting 8 in. above mound marked on the North, South, West and East sides -C- -NM- -1868- -8M- respectively.

CHAINS

From which point, a Pyramid Mound 600 feet high bears N 77 W
Pyramid Mound bears S 10 W, 2 miles dist.
Mound, bears S 30 E, 3 miles dist.
Surface prairie.
Soil 3rd rate.

West on 9th mile.
Variation 13° East.
45.00 Pyramid mound, bears N 800 lks. dist.
80.00 Offset from tangent to Parallel to 9th mile corner.
Marked stone 8x6x4 -9M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set sand stone 20x18x18 projecting 6 in. above mound, marked on the North, South, West and East sides -C- -XM- -1868- -9M- respectively. From which point a sand stone boulder bears N 60 E, 1.67 lks. dist.
Conical mound bears N 45 E, 10 chs. dist.
Pyramid mound, bears S 23 E.
Pyramid mound, bears S 10 E. 200 chs. dist.
Surface prairie.
Soil 3rd rate.
July 22nd. Measuring chain compared with standard and found correct.

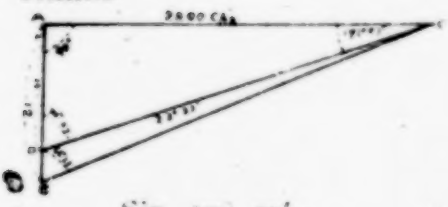
——West on 10th Mile——

Variation 13° East.
80.00 Offset from tangent to Parallel to 10th mile corner.
Marked stone 7x6x3 -10M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40x12x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -XM- -1868- -10M- respectively.
No natural objects near.
Surface level prairie.
Soil 2nd rate.

——West on 11th Mile——

Variation 12° 50′ East.
5.00 Foot of bluff, bears N N W. In order to measure the distance on line, with chain, to top of perpendicular bluff, or spur, I find the right angle triangle

CHAINS



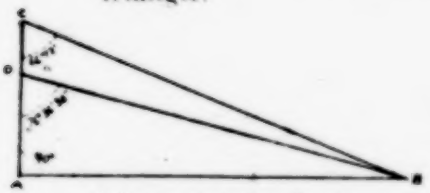
Sin. 23° 33′	= 9.601517
Sin. 66° 27′	= 9.962233
chs.	
Log. 12.20	= 1.086360
27.99.1 chs.	1.447023

Sin. 19° 30′ =	9.526093
Sin. 70° 21′ =	9.973942
chs.	
Log. 10.00 =	1.000000
28. chs.	1.447249

Therefore the mean is

chs.	lks.
27.	99.8

28.00 To top of perpendicular cliff or spur, bears SE. From flag on line, in vally, on West side of ridge, in order to get the distance to flag on ridge, I found the right angle triangle.



Sin. 23° 48′	= 9.605802
Sin. 66° 12′	= 9.961402
Log. 15 chs.	= 1.176000
34.01 chs.	1.531601

Measured Angles A=90, C=66 12′ 00″, D =73 36′ 30″

Therefore the angles A B C = 23.48′ 00″, A B D = 16.23.30 and measured sides A C=15 chs. A D= 10 chs.

Sin. 16° 23′ 30″ =	9.450560
Sin. 73° 36′ 30″ =	9.981979
Log. 10 chs. =	1.000000
34.99 chs.	1.531419

Mean 34 chs

Therefore the distance is 34 chs. This point is 9.50 chs. west of point of line entering valley.

52.50 Enter valley, bears S S E.

80.00 Offset from tangent to Parallel, to 11th mile corner. Marked stone 8x6x4 -11M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -11M- respectively. No natural objects near.

Surface a high ridge (about 600 feet above valley) running to a peak.

In valley nearly level.

CHAINS

Soil 2nd rate.

——West on 12th Mile——

Variation 12° 30' East.

80.00 Offset from tangent to Parallel to 12th mile corner, on flat sand stone, marked -12M- Built conical mound of stone, 4 feet high, over same. Dug pits to lbs. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x9x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -XM- -1868- -12M- respectively.

From which point a

Saddle mound bears N 45° W 30 chs. dist.

Pyramid mound bears N 65° E 30 chs. dist.

Point of Bluff bears S 12° W 60 chs. dist.

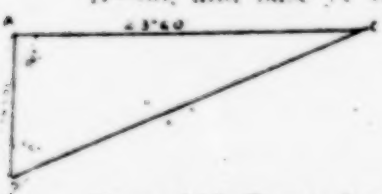
Surface nearly level valley.

Soil 2nd rate.

——West on 13th Mile——

Variation 12° 30' East.

62.30 It being impossible to measure with chain on line, I found the right angle triangle A B C measured angles A=90, B=66, and base A B=10 chs.



Sin. 23° 51'	= 9.606751
Sin 66° 09'	= 9.961235
Log. 10 chs.	= 1.000000
22.60 chs.	1.354484

64.00 Foot of bluff, 300 feet high.

80.00 Place for 13th mile corner, on side of bluff and impossible to establish corner.

Surface except bluff, rolling prairie.

Soil 2nd rate.

July 23rd. Measuring chain compared with standard and found correct.

——West on 14th Mile——

Variation 12° 30' East.

1.82 Top of bluff. Built witness mound of cobble stones, 4 feet high. Set sand stone 20x16x8 marked on the North, South, and West sides -C- -XM- -1868- respectively.

34.76 Top of sand stone bluff, bears S S E.

62.83 Enter valley, bears S S E.

80.00 Offset from tangent to Parallel to 14th mile corner.

CHAINS

Marked stone 8x6x3 -14M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x13x13, projecting 8 in. above mound, marked on the North, South, East and West sides -C- -NM- -1868- -14M- respectively. No natural objects near.
Surface, except bluff, gently rolling, prairie.
Soil 2nd rate.

——West on 15th Mile——

Variation 12° 30' East.

20.00 Leave valley, bears SE.

80.00 Place for 15th mile corner on side of bluff. Impossible to establish same.
Surface cut up by deep canons.
Soil 3rd rate.

——West on 16th Mile——

Variation 13° East.

60.00 Leave canon, bears E S E.

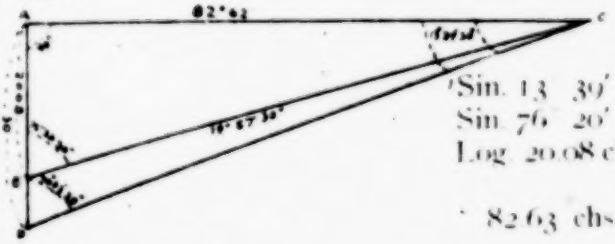
80.00 Offset tangent to Parallel to 16th mile corner.
Marked stone 8x5x3 -16M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -16M- respectively.
From which point a.
Scrub cedar tree, bears N 85W, 66 lks. dist.
Three pyramid mounds, centre one, bears N 20½W.
Saddle mound, bears S 67½ W.
Conical mound, bears S 56 W.
Surface broken, except last 20 chs.
Soil 3rd rate.

——West on 17th Mile——

Variation 13° East.

8.50 To top of bluff. It being impossible to measure with chain on line, I formed the right angle triangle A B C and A D C, measured angles A=90 B=76° 20' 30" D=70° 02' 30" and sides A B=20.08 chs. side A D=30 chs.

CHAINS



Sin. 13 30' 30"	=	9.373154
Sin. 76 20' 30"	=	9.987542
Log 20.08 chs	=	1.302704
82.63 chs.	=	1.917152

Sin. 19 57' 30"	=	9.533183
Sin. 70 02' 30"	=	9.973101
Log. 30 chs.	=	1.477121
82.61 chs.		1.917039

Mean 82.62 chs. to flag

36.00 Enter valley, bears SE.

60.00 Leave valley, bears SE and ascend bluff.

80.00 Place for 17th mile corner on side of bluff and impossible to establish corner.
Surface broken.
Soil 3rd rate.
July 24th. Measuring chain compared with standard and found correct.

——West on 18th Mile——

Variation 13° East.

10.50 Top of bluff. Built witness mound of stone 4 feet high, marked on the North, South and West sides -C- -XM- -1868- respectfully, and enter scattering pinon. Pine timber bears N N W.

40.00 Leave scattering timber and enter high prairie, bears North.

80.00 Offset from tangent to Parallel to 18th mile corner near edge of bluff. Marked stone 8x4x3, -18M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4' feet high, over same. Dug pits 10 lks. East and West from base of mound 10 in. deep—on account of flat stone deeper pits could not be dug. Set sand stone 36x18x4, projecting 8 in. above mound marked on the North, South, West and East sides -C- -XM- -1868- -18M- respectfully.
No natural objects near.
Surface rolling, mostly high prairie.
Soil 3rd. rate.

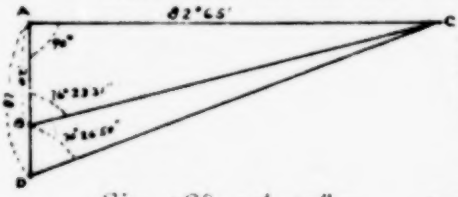
——West on 19th Mile——

Variation 13° 05' East.

1.00 Top of bluff, bears S S E. It being impossible to measure with chain on line I formed the right angle triangle A B C

CHAINS

A D C. Measured angles A=90 B=76.23.31 D =70.26.50. sides A B=20 chs. and A D=28 chs.



Sin. 13° 36′ 30″	= 9.371591	
Sin. 76° 23′ 30″	= 9.987634	
Log. 20 chs.	= 1.301030	
82.63 chs.	1.917073	

Sin. 18° 42′ 40″ =	9.506230	
Sin. 71° 17′ 20″ =	9.976418	Mean 82.64½ chs.
Log. 28 chs. =	1.447158	
82.67 chs.	1.917346	

Measured back from flag, East 355 lks.

80.00 Offset from tangent to Parallel to 19th mile corner on side hill. Marked sand stone 10x6x3 -19M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 ins. deep. Set sand stone 26x11x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -19M- respectfully.
No natural objects near.
Surface nearly all bluff.
Soil 3rd rate

——West on 20th Mile——

Variation 7° to 18° East.

2.65 To top of bluff, bears SE.

80.00 Offset from tangent to Parallel to 20th mile corner, on side of hill.
Marked sand stone 6x5x4 -20M- and deposited it 3½ feet in earth. Built conical mound of cobble stone, over same. 4 feet high. Impossible to dig pits on account of stone. Set sand stone 18x10x6 projecting 6 in. above mound, marked on the North, South, East and West sides -C- -NM- -20M- -1868 respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

——West on 21st Mile——

Variation 8° to 18° East.

19.10 A sand stone boulder, 6 feet above ground, 5 feet high, and

CHAINS

6 feet diameter.

80.00 Offset from tangent to Parallel, to 21st mile corner, on rock, marked -21M-. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x7x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -21M- respectively.

No natural objects near.

Surface broken prairie.

Soil 3rd rate.

July 25th. Measuring chain compared with standard, and found correct.

——West on 22nd Mile——

Variation 10° to 13° East.

7.00 Enter scattering scrub. Cedar timber on hills -bears South.

79.00 Canon, bears south.

80.00 Offset from tangent to Parallel, to 22nd mile corner. Marked sand stone 8x6x4; -22M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound. Marked on the North, South, West and East sides -C- -NM- -1868- -22M- respectively.

No natural objects near.

Surface broken.

Soil 3rd rate.

— West on 23rd Mile——

Variation 10° to East.

70.00 Enter valley of the Cimaron, bears E S E. Valley is hilly and stony, except near creek.

80.00 Offset from tangent to Parallel to 23rd mile corner. Marked sand stone 10x6x4 -23M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same, Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep, marked on the North, South, West and East sides -C- -NM- -1868- -23M- respectively.

No natural objects near.

Surface broken prairie.

Soil 2nd rate.

CHAINS

——West on 24th Mile——

Variation 13° East.

80.00 Offset from tangent to Parallel to 24th mile corner.
Marked stone 12x6x4 and deposited it, 3½ feet in ground. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -24M- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

——West on 25th Mile——

Variation 13° East.

32.00 Bed of creek—dry on line—banks 5 feet high, course South and West.

35.00 Leave bed of creek, course South. Sandy bottom, and in places stony. Water just South of line.

80.00 Offset from tangent to Parallel to 25th mile corner.
Marked sand stone 8x6x3 -25M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 38x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -25M- respectively.
No natural objects near.
Surface rolling, covered with stone.
Soil 2nd.
July 26th. Measuring chain compared with standard, and found correct.

——West on 26th Mile——

Variation 11° to 15° East.

56.00 Leave Cimaron valley, bears S S W. and enter hills.

80.00 Offset from tangent to Parallel to 26th mile corner in small ravine.
Marked stone 8x6x3 -26M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x4 projecting 6 in. above mound. Marked on the North, South, West and East sides -C- -NM- -1868- -26M- respectively.

CHAINS

No natural objects near.
Surface in valley, nearly level, balance broken and stony.
Soil 3rd rate.

——West on 27th Mile——

Variation 11½° to 14½° East.

22.00 Canon, 60 feet deep, 300 lks. wide, bears SE.

72.00 Foot of perpendicular bluff, 75 feet high, bears North and South.

77.25 Wall of stone 5 chs. long, and about 15 feet high. Impregnated about 15% with magnetic iron bears E S E and W N W.

80.00 Offset from tangent to Parallel, to 27th mile corner. Marked stone 10x6x4 -27M- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -27M- respectively.

No natural objects near.
Surface broken, covered with various kinds of thick brush.
Soil 3rd rate.
July 27th. Measuring chain compared with standard and found correct.

——West on 28th Mile——

Variation 13° East.

80.00 Offset from tangent to Parallel to 28th mile corner. Marked sand stone 10x6x3 -X and deposited it 3½ feet in earth. Built conical mound of cobble stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -28M- respectively.

No natural objects near.
Surface broken prairie, covered with stone and cactus.
Soil 3rd rate.

——West on 29th Mile——

Variation 13° East.

13.40 Canon, 300 feet deep, bears N N W.

33.76 Over same, bears N N W.

CHAINS

61.00 Descend into canon, 400 feet deep, bears NW and SW, and enter scattering scrub Pine and Cedar timber. Sides of canon and bluff covered with a promiscuous growth of scrub oak and various kinds of brush.

80.00 Offset from tangent to Parallel to 29th mile corner.
Deposited sand stone 10x8x4, 6 in. in earth, marked x, impossible to dig deeper. Built conical mound of sand stone, 4 feet high, over same. Impossible to dig pits, on account of stone. Set sand stone, 20x10x5 projecting 8 in above mound, marked on the North, South, West and East sides -C- -NM- -1868- -29M- respectively.
No natural objects near.
Surface broken and stony, covered with Oak, sage and other brush.
Soil 3rd rate.

——West on 30th Mile——

Variation 13° 10' East

0.72 Dry bed of Creek, 15 lks. Wide, stony bottom, course N N W.

15.50 Dry bed of creek, 15 lks. wide, stony bottom, course E N E.

35.00 Bend in dry bed of creek, 15 lks wide, filled with large sand stone boulders, course E N E and E S E.

41.30 Foot of perpendicular bluff, 50 feet high, bears North and South.

80.00 Offset from tangent to Parallel to 30th mile corner.
Marked sand stone 8x6x4 -30M-, and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 42x7x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -30M- respectively.
No natural objects near.
Surface 1st 50 chs. very broken and stony, covered with Oak and sage brush, balance gently rolling prairie.
Soil 3rd rate.
July 28th. Measuring chain compared with standard and found correct.

——West on 31st Mile——

Variation 13° 11' East.

80.00 Offset from tangent to Parallel, to 31st mile corner.

CHAINS

Marked sand stone 10x6x4 -31M-, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -31M- respectively.

No natural objects near.

Surface rolling prairie.

Soil 3rd rate.

—West on 32nd Mile—

Variation 13° East.

10.00 Enter brush and scattering Pine timber bears SE.

27.00 Canon, bears S S W.

36.80 Over same, 300 feet deep, bears S S W.

51.30 Large cedar tree, about 6 feet at base, and 15 feet high.

80.00 Offset from tangent to Parallel 7.78 lks. to 32nd mile corner.

Marked stone, 8x6x3 -32M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Impossible to dig pit on account of stone. Set sand stone 26x8x4 projecting 8 in. above mound marked on the North, South, West and East sides -C- -NM- -1868- -32M- respectively.

No natural objects near.

Surface covered with stone.

Soil 3rd rate.

Astronomical monument No. 1 is 12.50 lks. East of said corner, which is represented by a sand stone 75x14x11, set 3 feet in earth. Built mound of stone, 5 feet at base and 32 in. dia. Dug pits 6 feet from base of mound, on the North, South, West and East sides, 2 feet square and 18 in. deep. Monument marked on the North, South, West and East sides "Colorado" "New Mexico" "1868" "37NL"

No natural objects near.

July 29th. Measuring chain compared with standard and found correct.

Observations made on Polaris Aug. 2nd, 1868, P. M. and Aug. 3rd, 1868, A. M. Chronometer fast, on mean Solar

	hr	′	″
time, at 12 M—Aug. 2nd	5.	48.	59. 44

CHAINS

		h ' "
Aug. 2nd, P. M.	Polaris Chronometer time	10. 30. 24
Aug. 3rd, A. M.	do do do	9. 58. 35
	Chronometer interval	11. 28. 11
	Correction for rate	14.7
		11. 28. 25.7
	Reduction to sidereal time	1. 53.8
	Sidereal interval	11. 30. 19.5
		—12 .
	Sidereal time, less 12h	29. 45.5

Rate of chronometer 28.34 per day.

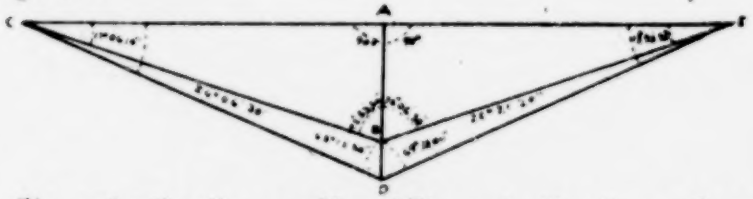
A	8.90' .25" = 13353.75	Log.	4.1256033
—	Cot. 88 36' .08" =		8.3887820
2	Sec. 37		0.0976514
	409.28.		2.6120367

Error of asimuth 6.49" .28" East.

——West on 33d Mile——

Variation 13° 20' East.

1.50 Top of bluff, bears N N W. It being impossible to measure with chain the sides of the bluff, from its top, nearly directly West of 33d mile corner, I set one flag in valley, and one on high ridge, West of valley, and from flag in valley, I formed the right angle triangle, with same perpendicular ABC, ADC, ABE and ADE. Measured the Angles A=90 B=72.53' .50" D= 65.13' .30" B=76.06' .30" D=69.38 .40. Measured sides AB=20 chs. AD= 30 chs.



Sin. 17°.06'.10"	= 9.468475	Sin. 24°.46'.30"	= 9.622272
Sin. 72°.53'.50"	= 9.980357	Sin. 65°.13'.30"	= 9.958067
Log. 20.chs.	= 1.301030	Log. 30 chs.	= 1.477121
65.00	1.812906	65.00	1.812916

CHAINS

Sin. 13 .53'.30"	= 9.380368	Sin. 20 .21'.20"	= 9.541386
Sin. 76° .06'.30"	= 9.987108	Sin. 69° .38'.40"	= 9.971095
Log. 20 chs.	= 1.301030	Log. 30 chs.	= 1.477121
80.88 chs.	1.907870	80.86 chs.	1.907730

Mean 80.87 chs. to flag on West of bluff.

47.50 Foot of bluff, bears S S W. and enters valley which is Prairie land, covered with grass.

73.00 Dry bed of creek, 30 lks. wide, 8 feet deep, stony bottom, course S S E.

78.00 Leave valley, bears S S E, and ascend hill.

80.00 Offset from tangent to Parallel, to 33d mile corner, on a large flat rock, marked with a +. Built a conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x10x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -XM- -1868- -33M- respectively.

From which point a
Sand stone boulder, 10x6x7 feet bears North 7 lks.
Surface in valley level, balance broken.
Soil 1st rate.

——West on 34th Mile——

Variation 13° 25' East.

65.80 Top of high Plateau, bears South.

73.37 Top of high Plateau, bears South.

80.00 Offset from tangent to Parallel to 34th mile corner, on side hill. Marked stone 8x6x4 -34M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Impossible to dig pits on account of stone. Set volcanic stone 30x16x13, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -XM- -1868- -34M- respectfully.

No natural objects near.
Surface broken.
Soil 3rd rate.

——West on 35th Mile——

Variation 13° 25' East.

00.00 Level Plateau, bears North and South.

80.00 Offset from tangent to Parallel, to 35th mile corner. Marked stone 10x6x4 -35M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x12x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -35M- respectively.

From which point
Spanish Peak, bears N 69¼ W.
Spanish Peak, bears N 67½ W.
Mound, bears N 50½ W.
Point of bluff, bears N 19½ W.
Point of bluff, bears N 3 E.
Hay stack mound, bears N 52½ E.
Hill, bears S 29 W.
Mound, bears S 50½ W.
Mound, bears S 57 W.
Mound, bears S 58¼ W.
Hill, bears S 62½ W.
Surface level Prairie.
Soil 2nd rate.

Aug. 3d. Measuring chain compared with standard and found correct.

——West on 36th Mile——

Variation 13° 27′ East.

80.00 Offset from tangent to Parallel, to 36th mile corner. Marked stone 8x6x3 -36M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -36M- respectively. No natural objects near.

——West on 37th Mile——

Variation 13° 35′ East.

50.00 Enter scattering pinion Pine timber, bears North.
55.00 Leave same, bears SE.
65.00 Top of perpendicular bluff, 5 feet high, bears S S W.
79.50 Enter valley, bears S S W.
80.00 Offset from tangent to Parallel, to 37th mile corner. Marked stone 4x3x3 -37M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x

CHAINS

12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -37M- respectively.
No natural objects near.
Surface broken and in places covered with scrub pinion.
Pine timber.
Soil 3rd rate.

——West on 38th Mile——

Variation 13° 30′ East.

57.00 Dry bed of creek, 10 lks. wide, stony bottom, course E. S. E.

80.00 Offset from tangent to Parallel to 38th mile corner, situated about 250 lks. South of head of dry creek. Marked stone 10x6x3 -38M- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides, -C- -NM- -1868- -38M- respectively.
No natural objects near.
Surface broken and stony.
Soil 3rd rate.

——West on 39th Mile——

Variation 13° 30′ East.

64.20 Foot of perpendicular cliff, 125 feet high, bears E. S. E.

69.50 Enter ravine, 50 lks. wide, bears North.

79.00 Enter scrub Pine and Cedar timber, bears North.

80.00 Offset from tangent to Parallel, to 39th mile corner. Marked stone 10x6x4 -39M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 27x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -39M- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

CHAINS

——West on 40th Mile——

Variation 13° 27' East.

5.00 Enter canon, bears N N E.

12.00 Leave canon, bears N N E.

50.00 Leave scattering scrub Pine and Cedar timber and top of perpendicular cliff, 40 feet high, bears S S W.

80.00 Offset from tangent to Parallel, to 40th mile corner. Marked stone 6x5x4 -40M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 32x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -40M- respectively. No natural objects near. Surface broken. Soil 3rd rate.

——West on 41st Mile——

Variation 13° 30' East.

63.00 Top of bluff, bears E N E.

80.00 Offset from tangent to Parallel, to 41st mile corner. Marked stone 8x6x3 -41M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -41M- respectively. From which point

A pinion Pine tree, bears N 80 W. 18 lks. dist.

No other tree near.

Surface broken.

Soil 3d rate.

Aug. 4th. Measuring chain compared with standard and found correct.

——West on 42nd Mile——

Variation 13° 30' East.

0.40 Enter scrub pine timber, bears North.

10.00 Leave same, and enter brush.

68.00 Top of bluff, and enter canon, bears E N E.

80.00 Offset from tangent to Parallel to 42nd mile corner. Marked stone 6x5x4 and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high over same. Dug pits 10 lks. East and West from base of mound.

CHAINS

2 feet square, and 18 in. deep. Set sandstone 30x18x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -42M- respectively. From which point

A large sand stone boulder, bears South, 10 lks. dist. with a scrub cedar tree just West of stone.

Surface broken.

Soil 3rd rate.

——West on 43rd Mile——

Variation 13° 25′ East.

15.00 Leave cañon, bears E N E.

40.00 Enter canon, bears SE.

50.50 Leave canon, bears SE.

80.00 Offset from tangent to Parallel, to 43d mile corner. Marked stone 10x6x3 -43M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x8x3, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -43M- respectively. No natural objects near.

Surface broken.

Soil 3rd rate.

——West on 44th Mile——

Variation 13° 20′ East.

30.00 Ascend hill, bears N N W.

58.00 Enter canon, bears N N E.

61.00 Leave canon bears N N E.

80.00 Offset from tangent to Parallel, to 44th mile corner, on side hill. Marked stone 8x6x4 -44M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x7x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -44M- respectively.

No natural objects near.

Surface broken.

Soil 3rd rate.

CHAINS

——West on 45th Mile——

Variation 13° 20' East.

80.00 Offset from tangent to Parallel to 45th mile corner.
Marked stone 8x6x4 -45M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x16x11, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -45M- respectively.
No natural objects near.
Surface hilly and in place covered with volcanic boulders.
Soil 3d rate.

——West on 46th Mile——

Variation 13° 20' East.

10.00 Enter valley, bears South.

26.20 Wagon road, bears S S E.

43.00 Leave valley, bears SW., and ascend hill, foot of Raton mountains.

80.00 Offset from tangent to Parallel to 46th mile corner.
Marked stone 10x6x4 -46M- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 40x20x12, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -46M- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 47th Mile——

Variation 13° 20' East.

33.00 To perpendicular cliff, about 60 feet high, bears E N E.
Side of cliff covered with volcanic stone.

80.00 Offset from tangent to Parallel to 47th mile corner.
Marked stone 8x6x4 -47M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x16x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -47M- respectively.
No natural objects near.

CHAINS

Surface 1st 35chs broken, covered with volcanic stone, balance level.
Soil 2nd rate.
Aug. 5th. Measuring chain compared with standard and found correct.

——West on 48th Mile——

Variation 11° to 15° East.

50.00 Top of bluff, 800 feet high, above the level of the country North, and for 200 feet, nearly perpendicular.
I offset North 3 chs. in order to measure the line, thence West 20 chs. offset back to line.

80.00 Offset from tangent to Parallel to 48th mile corner.
Marked stone 10x8x3 -48M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x12x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -48M- respectively. No natural objects near, surface of upland, level, covered with a fine growth of grass.
Soil 2nd rate.

——West on 49th Mile——

Variation 10° to 15° East.

48.00 Canon, bears N N E. It being impracticable to measure with chain on line, on account of ridge, thick brush and cliffs, I offset North 50 chs. and measure West 112 chs. offset to south line and set 50th mile corner.

80.00 Place for 49th mile corner, on side of cliff, impossible to establish corner.
Surface mountainous, covered with stone and various kinds of brush.

——West on 50th Mile——

Variation 11° to 18° East.

80.00 Offset from tangent to Parallel, to 50th mile corner, near top of bluff. Marked stone 12x10x4 -50M- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Set volcanic stone 26x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -50M-.
No natural objects near.

CHAINS

Surface mountainous and stony, covered with Oak and various kinds of brush.
Soil 3d.

——West on 51st Mile——

Variation 11° to 15° East.

80.00 Offset from tangent to Parallel, to 51st mile corner on side of hill, near foot. Marked stone 10x6x4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -51M- respectively. No natural objects near.
Surface broken, covered with Oak and various other kinds of brush.
Soil 3d rate.

——West on 52nd Mile——

Variation 11° to 15° East.

63.00 Enter low scrub pinon pine timber, bears North and South.

80.00 Offset from tangent to Parallel to 52nd mile corner, in scrub pinion Pine timber. Marked stone 10x6x4, -52M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -52M- respectively. No natural objects near.
Surface broken, covered with Oak and other kinds of brush and in places scattering pinion Pine timber.
Soil 3d rate.

——West on 53d Mile——

Variation 12° to 14° East.

26.00 Leave scrubPine and enter brush Prairie bears North and South.

26.50 Dry bed of Creek, 8 lks. wide, stony bottom, course N N W.

80.00 Offset from tangent to Parallel, to 53d mile corner.
Marked stone 5x4x3 -53M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x12x10, projecting 8 in. above mound, marked on the North, South,

CHAINS

West and East sides -C- -NM- -1868- -53M- respectively
No natural objects near.
Surface broken, nearly covered with various kinds of brush
Soil 3d rate.
Aug. 6th. Measuring chain compared with standard and found correct.

——West on 54th Mile——

Variation 12° to 14° East.

27.00 Enter scattering scrub pinion Pine timber, bears South

80.00 Offset from tangent to Parallel, to 54th mile corner. Marked stone 8x6x4 -54M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set pinion Pine post, 8 feet long, and 6 in. square, leveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides, -C- -NM- -1868- -54M- respectively.
No natural objects near.
Surface broken, nearly covered with scattering pinion Pine timber.
Soil 3d.

——West on 55th Mile——

Variation 12° to 14° E.

63.00 Leave scattering pinion Pine timber and scrub Oak brush, bears North and South.

75.30 Creek, 6 lks. wide, clear water, and gentle current, course N N W.

80.00 Offset from tangent to Parallel to 55th mile corner. Deposited stone 8x4x4 marked -55M- 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x12x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -55M- respectively.
No natural objects near.
Surface broken.
Soil 2nd rate.

——West on 56th Mile——

Variation 10° to 16° East.

37.00 Dry bed of Creek, 10 lks. wide, stony bottom, course N N W.

CHAINS

80.00 Offset from tangent to Parallel to 56th mile corner. Marked stone 8x8x6 -56M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -56M- respectively.
No natural objects near.
Surface rolling.
Soil 2nd rate.

——West on 57th Mile——

Variation 10½° to 15° East.

40.00 A conical mound, covered with pinion Pine timber, bears S 47 W.
Saddle mound, bears N 10 E. 8 chs. dist.

80.00 Offset from tangent to Parallel, to 57th mile corner. Marked stone 10x6x5 -57M- and deposited it, 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -57M- respectively.
No natural objects near.
Surface rolling.
Soil 2nd rate.

——West on 58th Mile——

Variation 11° to 15° East.

76.90 Top of perpendicular volcanic rock bluff 100 feet above bed of creek=Cabin bears N 25 W.

78.70 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course North.

80.00 Offset from tangent to Parallel, to 58th mile corner. Marked stone 10x6x4, -58M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x10x12, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -58M- respectively.
From which point
Cabin bears N 8 W.
Wall of rock, 30 feet high, bears N 55 W. about 4 chs. dist.

CHAINS

Surface broken Prairie.
Soil 2nd rate.

——West on 59th Mile——

Variation 12° to 15° East.

0.35 A ditch dug for irrigation.

1.00 Trail bears North.

14.00 A natural and most complete wall of volcanic stone, extending in a straight line, for a distance of 4 miles. A great portion of the stones composing it are trapezuin, and some parallelopiped in shape, and from their appearance appear to have been angled, and set by the skilled artisan many centuries ago. They will average in weight about 400 lbs: the wall in height to be 50 feet, and is from 50 to 200 feet above valley. The South side portion of the wall is of various heights, while the North side, is more regular and has a uniform height of about 5 feet. It bears N 87 E, and S 87 W.

40.00 Cabin, bears N 31 E.

80.00 Offset from tangent to Parallel, to 59th mile corner.
Marked stone 8x6x4 -59M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -59M- respectively.
No natural objects near.
Surface broken.
Soil 2nd rate.
Aug. 7th. Measuring chain compared with standard and found correct.

——West on 60th Mile——

Variation 9° to 22° East.

35.00 Cabin, bears N 48 W.

80.00 Offset from tangent to Parallel to 60th mile corner.
Marked stone 10x6x3 -60M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set volcanic stone 20x16x10, projecting 6 in. above mound, marked on the North, South West and East sides -C- -NM- -1868- -60M- respectively.

CHAINS.

No natural objects near.
Surface broken.
Soil 2nd rate.

——West on 61st Mile——

Variation 14° East.

49.00 Ravine and dry bed of creek, 10 lks. wide, 10 lks. South, course North.

79.50 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course NE.

80.00 Offset from tangent to Parallel, to 61st mile corner.
Marked stone 6x5x4 -61M- and deposited it, 3½ feet in earth. Built conical mound, of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound. 2 feet square and 18 in. deep. Set volcanic stone 28x8x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -61M- respectively.
No natural objects near.
Surface broken.
Soil 2nd rate.

——West on 62nd Mile——

Variation 13° East.

2.30 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course E S E.

3.30 Same creek, 15 lks. wide, clear water, rapid current, stony bottom, about 2 in. deep, course E N E. Scattering Oak, brush on banks.

15.00 Leave valley, bears NE.

80.00 Offset from tangent to Parallel to 62nd mile corner, on top of hill.
Marked stone 10x6x4 -62M- and deposited it, 3½ feet in earth. Built conical mound of stone, 4 feet high, over Same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x16x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -62M- respectively.
No natural objects near.
Surface hilly.
Soil 2nd rate.

——West on 63d Mile——

Variation 12° to 14° East.

20.00 Enter valley, bears N N W.

CHAINS

33.30 Dry bed of Creek, 20 lks. wide, stony bottom, banks 6 feet high, course S S E.

42.00 Leave valley, bears N N E.

80.00 Offset from tangent to Parallel 7. 30. 1 lks. to 630 mile corner, on side hill.

Marked stone 10x6x3 -63M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22x11x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -63M- respectively.

No natural objects near. Surface broken. Soil 3d rate.

Aug. 8th. Measuring chain compared with standard and found correct.

Astronomical monument is 21.00 chs. East of said corner, and is represented by a charred cedar post, 11 feet long and 12 in. square. Marked volcanic stone 12x12x4 A Sta. No. 2 -37 N L- and deposited it in earth. Set post 4 feet in earth, marked on the North, South, East and West sides "Colorado" "New Mexico" "1868" "37 NL". Built mound of cobble stones, 6 feet base and 4 feet high. Dug pits 6 feet, East, West, North and South, 2 feet square and 18 in. deep, from base of mound.

Observations made on Polaris, lower and upper culmination for Asimuth Aug. 9th P. M. -Aug. 10th A. M.-

Chronometer fast on mean Solar time, Aug. 9th M. 5h 50m 10s, with a loosing rate of 22.5 per day, or mean Solar time.

	h	m	s
Time of lower transit as marked by chronometer, Aug. 9th P. M.—	9	26	50
Time of upper transit, Aug. 10th A. M.	9	24	30
Chronometer interval	11	57	40
Correction for rate			11.2
Mean solar interval	11	57	51.2
Reduction to sidereal time		1	57.9
Sidereal interval	11	59	49.1
—12			
h			
Less than 12			11

CHAINS

Computation for error Asimuth

	Δ 05′ 5 82.5	Log =	1.916454
—	d cot. 88.36.9	=	8.392381
2	Sec. 37	=	0.097651
Error 2″.5			0.406486

Observations at 63d mile corner, 21 chs. West of Astronomical Monument No. 2.

——West on 64th Mile——

Variation 13° 20′ East.

56.50 Canon, 200 lks. wide, bears North.
61.00 Canon, 200 lks. wide, bears N N E.
75.00 Top of bluff, bears North.
80.00 Offset from tangent to Parallel to 64th mile temporary corner.

Surface broken prairie.
Soil 3d rate.

——West on 65th Mile——

Variation 11° to 14° East.

20.00 Dry bed of Creek, high banks, course NW.
48.50 Bend in creek 20 lks. wide, clear water, swift current, stony bottom, banks about 4 feet high, course E S E and E N E.
58.00 Same Creek, 20 lks. wide, course East.
75.00 Bend in same Creek, course East.
80.00 Offset from tangent to Parallel, to 65th mile temporary corner.

Surface very broken.
Soil 3d rate.

——West on 66th Mile——

Variation 12° to 14° East.

5.00 Leave valley, bears South.
24.75 Top of hill.
50.00 Spring branch, 3 lks. wide, course SE.
68.50 Spring branch, 2 lks. wide, course SE.
80.00 Offset from tangent to Parallel, to 66th mile, temporary corner.

Surface mountainous, covered with volcanic stone and thick growth of Oak and black locust and various other kinds of brush and vines.
Soil 3d rate.

CHAINS

Aug 10th Measuring chain compared with standard, and found correct.

——West on 67th Mile——

Variation 11° to 15° East.

80.00 Offset from tangent to Parallel to 67th mile, temporary corner.

Surface broken, covered with stone and heavy growth of Oak, black locust and various kinds of brush.

Soil 3d rate.

——West on 68th Mile——

Variation 11° to 15° East.

75.00 Highest point of ridge, 1000 ft above creek valley.

70.20 Creek, 25 lks. wide, clear water, rapid current and stony bottom, course S S E.

80.00 Place for temporary 68th mile corner, but impossible to establish it.

Surface mountainous, covered with volcanic stone and thick undergrowth of Oak, black locust and various other kinds of brush.

Soil 3rd rate.

——West 7m 60th Mile——

Variation 12° to 14° East.

31.80 Top of perpendicular bluff, 150 feet high bears S S E.

32.00 Built cobble stone witness mound. Set volcanic stone 28x12x10, marked on the North, South and West sides -C- -NM- -1868- respectively.

The surface between the top of ridge, 15 chs. West of the 68th mile corner, being very rough and broken, making it impracticable to measure the distance with chain with accuracy from that point, and in order to test the measurement, I formed the triangle ABC and ADC, measured angles A=90 B=78° 21' 50" D=72° 50', hence we have the formula angle C—Sin 11 AB AC, or

Sin 11° 38' 10" =	9.304697
Sin 78° 21' 50" =	9.990981
Log 20 chs =	1.301030
97 chs 10 lks.	1.687214

CHAINS

Sin. 17° .10'=	9.470046	Mean 97 chs. 11 lks. to flag.
Sin. 72 .50'=	9.980208	
Log. 3 chs.=	1.477121	
97 chs. 12 lks.	1.987283	

There being 49 lks. difference between the computation and measurement of the distance of the line, from A to C, I adopted the computed distance, making the distance to the stone monument 97 chs. 11 lks. Therefore the stone monument is 32 chs. 11 lks. on 69th mile corner.

80.00 Offset from tangent to Parallel to 69th mile temporary corner.

Surface in canon broken, covered with a thick growth of oak, black locust, ash and other kinds of brush.

Soil 2nd rate.

Surface after leaving canon, gently rolling.

Soil 3rd rate.

Aug. 11th. Measuring chain compared with standard, and found correct.

——West on 70th Mile——

Variation 11° to 17° East.

80.00 Offset from tangent to Parallel, to 70th mile, temporary corner.

From which point

A volcanic stone, projecting 36x30x24 in. above surface, is 39 lks. West of temporary corner, marked +.

Surface gently rolling.

Soil 2nd rate.

——West on 71st Mile——

Variation 11° to 17° East.

53.50 Ledge of Granite rock, bears SW and NE.

80.00 Offset from tangent to Parallel, to 71st mile, temporary corner.

Surface rolling.

Soil 2nd rate.

——West on 72nd Mile.——

Variation 11° to 17° East.

4.00 Highest point on Plateau, from which a point of perpendicular stone bluff, bears S 27 W.

Conical mound in valley, bears S 12 W.

Point of bluff, bears S 3½ W.

CHAINS

Large hill, bears S 17½ E.
3 mounds, centre one, highest, bears S 26 E.
Saddle mound, bears S 54 E.
High peak, bears S 56 1/3 E.
High peak, bears S 67¼ E.
North point of high mountain ridge, bears N 64 E.
80.00 Offset from tangent to Parallel to 72nd mile temporary corner.
Surface gently rolling.
Soil 2nd rate.

——West on 73d Mile——

Variation 10° to 16° East.
0.70 Top of perpendicular volcanic ledge, 200 feet high.
80.00 Offset from tangent to Parallel, to 73d mile temporary corner.
Surface very broken.
Soil 3d rate.
Aug. 12th. Measuring chain compared with standard and found correct.

——West on 74th Mile——

Variation 10° to 16° East.
15.00 Creek, 10 lks wide, clear water, rapid current, stony bottom, high banks, course E S E.
80.00 Place for 74th mile corner, on side of ridge.
Impossible to establish temporary corner.
Surface mountainous, covered with a thick growth of Oak and black locust and various kinds of brush and vines, they being so thick and compact as to be almost impossible to penetrate them.
Soil 3d rate.

——West on 75th Mile——

Variation 10° to 16° East.
12.00 Creek, 15 lks. wide, clear water, rapid current, stony bottom, course SW.
60.00 Enter valley, bears E S E.
60.30 Indian trail, bears E S E.
65.00 Creek, 18 lks. wide, clear water, gentle current, sandy bottom, course E S E.
80.00 Place for 75th mile corner, impossible to establish temporary corner.
Surface mountainous, covered with a thick growth of Oak,

CHAINS

Locust and various other kinds of brush and vines.
Soil 3d rate.

West on 76th Mile

Variation 10° to 16° East.

62.05 Top of bluff, 1000 feet high. Built a witness cobble stone mound and set volcanic stone 30x12x10, in same, marked on the North -C- South -NM- West -1868-. It being impracticable to measure with chain, on line with accuracy on account of the mountainous character of the country between the 72nd mile corner, and this point, in order to test the same, I formed the right angle triangle ABC and ADC, the point, A, being the witness corner, and point C the 72nd mile corner. Measured angles A 90° B 75° 07' 40" and angles D 90° 08' 16' 30" Sides AB 80 chs side AC 120 chs.

Sin 14° 38' 20"		9.400305
Sin 75° 07' 40"		9.985202
Log 80 chs.		1.903090
		2.478927
301.22 chs.		
Sin 21° 43' 10"	9.568275	
Sin 68° 16' 50"	9.968019	
Log. 120 chs.	2.079181	Mean 301.22 chs.
301.22 chs.	2.478925	

Therefore, the computed distance 301.22 chs. is 83 lks less than the distance measured with chain, which I think is much more accurate than chain measurement, as great pains was taken to have the angles and bases measured as accurate as possible. Therefore I adopted the computed distance, making the cobble stone mound 75 miles 61 chs and 22 lks.

66.50 Enter canon, 200 feet deep, bears NE.

80.00 Offset from tangent to Parallel, to 76th mile, temporary corner, in canon.

CHAINS

Surface mountainous, covered with Oak and Locust brush.
Soil 3d rate.
Aug 13 Measuring chain compared with standard and found correct.

——West on 77th Mile——

Variation 10° to 16° East.

2.30 Leave canon, bears North.

74.20 Indian trail, bears S S W.

80.00 Offset from tangent to Parallel to 77th mile, temporary corner.
Surface rolling.
Soil 3d rate.

——West on 78th Mile——

Variation 10° to 17° East.

80.00 Offset from tangent to Parallel, to 78th mile, temporary corner.
Surface, a high, gently rolling plateau.
Soil 3d rate.

——West on 79th Mile——

Variation 9° to 19° East.

72.00 Top of bluff, bears North.

80.00 Offset from tangent to Parallel, to 79th mile, temporary corner.
Surface, a gradual descent to the West.
Soil stony.
3d rate.

——West on 80th Mile——

Variation 11° to 15° East.

chs

3.34 Offset to Parallel, said point on parallel is 2.40 lks South of Astronomical monument No 3 Therefore the correction will be 17 27/100 lks per mile.
Aug 14th Measuring chain compared with standard and found correct.

——East on 80th Mile——

Variation.

chs

80.00 Moved temporary corner 3.27.1 North, and set true corner.
Marked stone 5x5x4 and deposited it 3½ feet in earth.

CHAINS

Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x8, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -80M-.

——East on 79th Mile——

Variation.

80.00 Moved temporary corner 3.06.7 lks. North and set true corner.

Marked stone, but impossible to deposit it, on account of stone. Built conical mound of stone 4 feet high over it. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 34x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- NM- -1868- -79M- respectively. No natural objects near.

——East on 78th Mile——

Variation.

80.00 Moved temporary corner 2.86.2 lks. North, and set true corner.

Marked stone 8x6x4 -78M- and deposited it 3½ feet in earth. Built conical mound of earth and volcanic stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 27x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -78M- respectively.

No natural objects near.

——East on 77th Mile——

Variation.

80.00 Moved temporary corner, 2.65.9 lks. North, and set true corner.

Marked stone 8x6x4 -77M- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -77M- respectively.

No natural objects near.

CHAINS

——East on 76th Mile——

Variation.

80.00 Moved temporary corner 245.5 lks. North, and set true corner.

Marked stone 11x7x4 -76M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set volcanic stone 20x10x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -76M- respectively.

No natural objects near.

——East on 75th Mile——

Variation.

80.00 Place for 75th mile corner, on side hill, impossible to establish it.

——East on 74th Mile——

Variation.

80.00 Place for 74th mile corner on side of bluff, impossible to establish it.

——East on 73d Mile——

Variation.

80.00 Moved temporary corner 184.2 lks. North and set true corner.

Marked stone 10x6x8 -73M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square leveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -73M- respectively.

No natural objects near.

——East on 72nd Mile——

Variation.

80.00 Moved temporary corner 163.7 lks. North and set true corner.

Marked stone 10x5x4, -72M- and deposited it 3½ feet in earth. Built conical mound of volcanic cobble stones, 4 feet high, over same. Dug pits 10 lks. East and West from

CHAINS

base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -72M- respectively.
No natural objects near.

——East on 71st Mile——

Variation.

80.00 Moved temporary corner 1.43.4 lks. North and set true corner.
Marked stone 10x6x3 -71M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set sand stone 30x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -71M- respectively.
No natural objects near.

——East on 70th Mile——

Variation.

80.00 Moved temporary corner 1.43.4 lks. North and set true corner.
Marked volcanic stone 10x6x4 -70M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks, East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -70M- respectively.
No natural objects near.

——East on 69th Mile——

Variation.

80.00 Moved temporary corner 1.23.0 lks. North and set true corner.
Marked stone 10x6x4 and -69M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x8x7, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -69M- respectively.
No natural objects near.

CHAINS

——East on 68th Mile——

Variation.

80.00 Place for 68th mile corner, but impossible to establish it.

——East on 67th Mile——

Variation.

80.00 Moved temporary corner 8.21.0 lks. North and set true corner.

Marked stone 10x6x4 -67M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -67M- respectively. No natural objects near.

——East on 66th Mile——

Variation.

80.00 Moved temporary corner 6.17.0 lks. North and set true corner.

Deposited volcanic stone 8x6x3 -66M-, and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 36x14x4 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -66M- respectively.

No natural objects near.

——East on 65th Mile——

Variation.

80.00 Moved temporary corner 4.13.0 lks. North, and set true corner.

Marked stone, 8x6x4 -65M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x16x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -65M- respectively. No natural objects near.

——East on 64th Mile——

Variation.

80.00 Moved temporary corner 2.09.0 lks. North and set true corner.

CHAINS

Marked stone 10x6x3 -64M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet sqr. and 18 in. deep. Set volcanic stone 18x16x10 projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -64M- respectively. No natural objects near.

Observations for Asimuth at Astronomical monument No. 3—On d Ursae Minoris, Dec. 86° 36' 40" RA 18h 15m 00s.4 and, 51 Cephei Dec. 87° 14' 07" -RA 6h 37m 35s Aug. 19th. 1868, PM—Chronometer fast, at mean noon on Solar time 5h 49m 42s with a loosing rate of 22 per day.

	h	m	s
Chronometer time of observations of d Ursae Minoris, upper transit	2.	10.	54.
Chronometer time of observation of 51 Cephei	2.	33.	25
Chronometer interval		22.	31
Chronometer rate			0.34
Reduction to Sidereal time			3.7
		22.	35.04
Difference in RA of the two stars		22.	34.7
			.34

Δ = 00m .34s = 5".10	Log. =	0.707570
— Cos. d 86° 36' 40"	=	8.771681
Cos. d 87° 14' 07"	=	8.683229
Sec. ϕ 37°	=	0.097657
Cosec. 6.09.13	=	0.060827
Error 0" 19		1.220958

——West on 80th Mile——

Variation 13° 40' East.

51.34 Astronomical Monument No. 3 which is represented by a sand stone 75x20x12 marked on the North, West and East sides "Colorado" "New Mexico" "1868" "37NL". Marked stone 8x6x6 -37NL- 1868, and deposited it under

CHAINS

stone. Built conical mound of stone, 6 feet at base and 3 feet high.

52.00 Santa Fe road and telegraph line, bears North.

80.00 Offset from tangent to Parallel, to 80th mile, temporary corner.

Surface rolling.

Soil 2nd rate.

——West on 81st Mile——

Variation 13° 40° East.

1.00 Road, bears E S E.

4.75 Same road, bears South.

12.10 Enter 2nd rate, white Pine timber, with thick brush, bears SE.

80.00 Offset from tangent to Parallel, to 81st mile, temporary corner.

Surface broken.

Soil 2nd rate.

——West on 82nd Mile——

Variation 13° 40′ East.

2.25 Canon, 70 lks. wide, bears South.

36.75 Canon, 100 lks. wide, bears S S E.

73.00 Cabin, bears N 18 W, about 14 chs. dist.

73.00 Canon, 200 lks. wide, bears S S E.

80.00 Offset from tangent to Parallel, to 82nd mile, temporary corner.

Surface, mountainous, covered with 2nd rate yellow Pine timber, and an undergrowth of Oak, wild and black locust brush.

Soil 3d rate.

——West on 83d Mile——

Variation 13° 42′ East.

37.00 Canon, 5 chs. wide, bears S S E.

80.00 Offset from tangent to Parallel, to 83d mile, temporary corner.

Surface mountainous, covered with 2nd Pine timber

Soil 3d rate.

——West on 84th Mile——

Variation 13° 43′ East.

7.00 Canon, 100 lks. wide, bears N N E.

39.00 Canon, 200 lks. wide, bears N N E.

CHAINS

80.00 Offset from tangent to Parallel to 84th mile temporary corner.

Surface mountainous, covered with 3d rate Pine timber.

Soil 2nd rate.

——West on 85th Mile——

Variation 13° 43′ East.

9.00 Ratoon Peak, bears N 38½ W.

42.00 Canon, bears North.

56.00 Leave canon, bears N N W.

77.00 Canon, 200 lks. wide, bears N N W.

80.00 Offset from tangent to Parallel to 85th mile temporary corner.

Surface broken, covered with 2nd rate Pine timber and an undergrowth of Oak and wild locust brush, etc.

Soil 3d rate.

——West on 86th Mile——

Variation 13° 46′ East.

17.00 Canon, 200 lks. wide, bears N N W.

30.50 Canon, 200 lks. wide, bears N N W.

59.00 Canon, 200 lks. wide, bears W S W.

64.00 Canon, 300 lks. wide, bears N W.

80.00 Offset from tangent to Parallel to 86th mile temporary corner.

Surface mountainous, covered with 2nd rate Pine timber and an undergrowth of black locust brush.

Soil 2nd rate.

Aug. 21st. Measuring chain compared with standard and found correct.

——West on 87th Mile——

Variation 13° 47′ East.

8.00 Canon, 4 chs. wide, bears N N W.

28.50 Canon, 5 chs. wide, bears N N W.

61.50 Canon, 5 chs. wide, bears N W.

80.00 Offset from tangent to Parallel to 87th mile temporary corner.

Surface broken, covered with 2nd rate Pine timber and an undergrowth of Oak and locust brush.

Soil 2nd rate.

——West on 88th Mile——

Variation 13° 50′ East.

25.50 Enter fallen timber, bears North.

CHAINS

40.00 Leave fallen timber and enter brush, bears North.
58.50 Leave brush, bears North.
73.00 Creek, 8 lks. wide, clear water, rapid current, stony bottom, course N N W.
80.00 Offset from tangent to Parallel to 88th mile, temporary corner.
Surface broken, East half covered with 2nd rate Pine timber, balance covered with Oak, Locust, brush and vines.
Soil 3d rate.

——West on 89th Mile——

Variation 13° 50′ East.
15.00 Enter scattering Pine timber, bears N N W.
23.00 Leave 2nd rate Pine timber, bears N N E.
38.50 Canon, 200 lks. wide, bears N N W.
77.00 Canon, 30 lks. wide, bears North.
80.00 Offset from tangent to Parallel, to 89th mile temporary corner.
Surface mountainous, covered with Oak and locust brush.
Soil 3d rate.

——West on 90th Mile——

Variation 13° 50′ East.
11.00 Enter 2nd rate Pine timber, bears S S E.
28.00 Canon, 300 lks. wide, bears NW.
75.00 Canon, 250 lks. wide, bears NW.
80.00 Offset from tangent to Parallel to 90th mile, temporary corner.
Surface broken, covered with 2nd rate Pine and spruce timber, and an undergrowth of Oak and Locust brush.
Soil 3d rate.
Aug. 22nd. Measuring chain compared with standard and found correct.

——West on 91st Mile——

Variation 13° 50′ East.
14.00 Canon, 200 lks. wide, bears NW.
40.00 Canon, 300 lks. wide, bears North.
80.00 Offset from tangent to Parallel to 91st mile temporary corner.
Surface mountainous, covered with 2nd rate Pine timber and a thick growth of Oak and locust brush.
Soil 2nd rate.

CHAINS

——West on 92nd Mile——

Variation 13° 50′ East.

3.00 Canon, 3 chs. wide, bears NW.

49.00 Prairie valley, bears N N W.

51.40 Creek, 10 lks. wide, clear water, rapid current, and stony bottom, course North.

52.50 Leave valley, bears N N W.

69.60 Enter valley, bears N N W.

69.80 Creek, 15 lks. wide, banks 4 feet high, clear water, 4 in deep, swift current, stony bottom, course North.

78.60 Wagon road, from Cimaron or Maxwells mines to Trinidad, Colorado.

80.00 Offset from tangent to Parallel to 92nd mile, temporary corner.

Surface mountainous, covered with Locust Oak and various kinds of brush.

Soil 2nd rate.

Different veins of bituminous coal crops out in this section from side hills, etc.

——West on 93d Mile——

Variation 13° 51′ East.

5.50 Leave valley, bears E N E and SW.

25.00 Canon, 100 lks. wide, bears SW.

40.00 Enter 2nd rate Pine timber, bears North.

80.00 Offset from tangent to Parallel, to 93d mile, temporary corner.

Surface mountainous, covered with 2nd rate Pine and spruce timber, and undergrowth of Oak and Locust brush.

Soil 2nd rate.

——West on 94th Mile——

Variation 13° 52′ East.

30.00 Canon 100 lks. wide, bears SE.

80.00 Offset from tangent to Parallel to 94th mile temporary corner.

Surface mountainous, covered with 2nd rate Pine and spruce timber and an undergowth of Oak and Locust brush.

Soil 2nd rate.

——West on 95th Mile——

Variation 13° 52′ East.

27.50 Canon, 50 lks. wide, bears S S E.

72.50 Canon, 3 chs. wide, bears South.

CHAINS

80.00 Offset from tangent to Parallel to 95th mile, temporary corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber.
Soil 2nd rate.
Aug. 23d. Measuring chain compared with standard and found correct.

——West on 96th Mile——

Variation 13° 53′ East.
14.50 Canon, 4 chs. wide, bears S S E.
80.00 Offset from tangent to Parallel, to 96th mile, temporary corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber and can undergrowth of Oak, Locust and various other kinds of brush.
Soil 2nd rate.

——West on 97th Mile——

Variation 13° 54′ East.
4.00 Canon, 40 lks. wide, bears South.
Note: A bituminous coal bed, 25 lks. South about 4 feet thick.
5.00 Leave timber and thick brush, bears E S E.
24.50 Canon, 300 lks. wide, bears S E.
72.00 Enter 2nd rate Pine timber, bears S S W.
80.00 Offset from tangent to Parallel to 97th mile, temporary corner.
Surface broken, covered with thick growth of Oak, Locust and various other kinds of brush. Last 8 chs. 2nd rate Pine timber.
Soil 3d rate.

——West on 98th Mile——

Variation 13° 54′ East.
16.00 Canon, 2 chs. wide, bears SE.
62.60 Indian trail, bears SW.
73.50 Canon, 75 lks. wide, bears NW.
80.00 Offset from tangent to Parallel to 98th mile temporary corner.
Surface broken, covered with 2nd rate Pine and Spruce timber and an undergrowth of Oak and Locust brush.
Soil 3d rate.

CHAINS

——West on 99th Mile——

Variation 13° 54′ East.

17.50 Ravine, 100 lks. wide, bears N N W.

22.50 Leave 2nd rate timber and enter Oak and Aspen brush, bears NE.

51.00 Canon, 200 lks wide, bears N N E.

70.00 Enter 2nd rate Pine timber, bears SE.

80.00 Offset from tangent to Parallel to 99th mile temporary corner.

Surface mountainous, about 2/3 of the mile has been burnt over, and covered with fallen timber, grown up to Aspen and Oak brush.

Soil 2nd rate.

——West on 100th Mile——

Variation 13° 55′ East.

8.00 Canon, 1 ch. wide, bears North.

30.00 Canon, 2 chs. wide, bears NE.

50.00 Top of mountain, bears SE.

80.00 Offset from tangent to Parallel, to 100th mile, temporary corner.

Surface broken and mountainous, covered with 2nd rate Pine, Fir and Spruce timber, and an undergrowth of Oak, Locust and other kinds of brush.

Soil 3d rate.

Aug. 24th. Measuring chain compared with standard and found correct.

——West on 101st Mile——

Variation 13° 55′ East.

12.00 Canon, 200 lks. wide, bears N N W.

31.00 Canon, 300 lks. wide, bears N N E.

80.00 Offset from tangent to Parallel to 101st mile temporary corner.

Surface mountainous, covered with 2nd rate Pine, Fir and Spruce timber and an undergrowth of Oak and Locust brush.

Soil 3d rate.

——West on 102nd Mile——

Variation 13° 55′ East.

23.75 Canon, 2 chs. wide, 800 feet deep, bears S S W.

80.00 Offset from tangent to Parallel to 102nd mile tem corner.

Surface mountainous, covered with 2nd rate Pine, Spruce timber and an undergrowth of Oak and brush, stony on side of bluffs.

CHAINS

Soil 3d rate

——West on 103d Mile——

Variation 13° 55′ East.

5.00 Enter Aspen timber and brush, bears North.

9.50 Canon, 100 lks. wide, bears North.

36.00 Canon, 150 lks. wide, bears North.

46.00 Canon, bears E N E.

61.00 Leave canon, bears E N E.

73.00 Enter canon, bears E N E.

79.00 Leave canon, bears E N E.

80.00 Offset from tangent to Parallel, to 103d mile, temporary corner.

Surface mountainous, covered with Aspen brush. It was covered with Aspen timbers, but fire, only a shore time since destroyed it, and Aspen brush has grown up in its stead.

Soil 2nd rate.

——West on 104th Mile——

Variation 13° 55′ East.

38.00 Leave side of bluff, bears E N E.

80.00 Offset from tangent to Parallel to 104th mile temporary corner.

Surface, 1st half mountainous, covered with brush, 2nd half a high plateau covered with 2nd rate yellow pitch Pine and fir timber.

Soil 3d rate.

Aug. 25th. Measuring chain compared with standard, and found correct.

——West on 105th Mile——

Variation 13° 55′ East.

10.00 Top of bluff, bears N N W.

20.00 Canon, 200 lks. wide, bears N N W.

35.00 Enter fallen Aspen timber, grown up to thick brush, bears North.

46.50 Enter 2nd rate Pine and Fir timber, bears North.

80.00 Offset from tangent to Parallel, to 105th mile, temporary corner.

Surface mountainous, covered mostly with 2nd rate Pine and Fir timber and an undergrowth of Oak and Aspen brush.

Soil 3d rate.

CHAINS

——West on 106th Mile——

Variation 13° 55′ East.

15.50 Canon, 200 lks. wide, bears N N E.

50.50 Canon, 300 lks. wide, bears SE.

80.00 Offset from tangent to Parallel, to 106th mile, temporary corner.

Surface broken, covered with 2nd rate Pine Fir and Aspen timber.

Soil 2nd rate.

——West on 107th Mile——

Variation 13° 55′ East.

80.00 Offset from tangent to Parallel, to 107th mile, temporary corner.

Surface broken.

Soil 1st rate.

——West on 108th Mile——

Variation 13° 55′ East.

80.00 Offset from tangent to Parallel, to 108th mile, temporary corner.

Surface rolling, covered with 2nd rate Pine and Aspen timber and an undergrowth of Oak brush.

Soil 2nd rate.

——West on 109th Mile——

Variation 13° 55′ East.

80.00 Offset from tangent to Parallel to 109th mile temporary corner.

Surface rolling, covered with 2nd rate pitch Pine and Aspen timber.

Soil 2nd rate.

Aug. 26th. Measuring chain compared with standard, and found correct.

——West on 110th Mile——

Variation 13° 55′ East.

2.50 Canon, bears S S W.

37.00 Prairie Valley covered with grass, bears S SE.

74.00 Leave 2nd rate Pine timber, bears S S W.

77.00 Enter low bottom, bears S S E.

77.00 Creek, 3 lks. wide, low banks, clear water, swift current, sandy bottom, course S S E.

78.50 Leave low bottom, bears S S E.

CHAINS

80.00 Offset from tangent to Parallel, to 110th mile, temporary corner.
Surface broken, covered with 2nd rate Pine and Aspen timber.
Soil 2nd rate.

——West on 111th Mile——

Variation 13° 55′ East.

1.50 Enter 2nd rate Pine timber, bears SE.

80.00 Offset from tangent to Parallel, to 111th mile, temporary corner.
Surface rolling, covered with 2nd rate Pine and Aspen timber.
Soil 1st rate.

——West on 112th Mile——

Variation 13° 50′ East.

72.50 Canon, 500 feet deep, 250 lks. wide, bears S S W.

80.00 Offset from tangent to Parallel, to 112th mile temporary corner.
Surface broken.
Soil 2nd rate.

——West on 113th Mile——

Variation 13° 55′ East.

12.00 Top of mountain ridge, bears S S W.

34.20 Canon, 200 lks. wide, bears South.

77.70 Creek, 6 lks. wide, clear water, gentle current, rocky bottom, course S S E.

80.00 Offset from tangent to Parallel, to 113th mile, temporary corner.
Surface mountainous and stony, covered with 2nd rate Pine and Aspen timber.
Soil 3d.

——West on 114th Mile——

Variation 13° 55′ East.

0.50 Canon, 100 lks. wide, bears S S W.

47.00 Creek, 4 lks. wide, clear water, gentle current, stony bottom, course North.

72.50 Canon, 100 lks. wide, bears South.

80.00 Offset from tangent to Parallel, to 114th mile, temporary corner.
Surface mountainous and stony, covered with 2nd rate

CHAINS

Pine and Fir timber.
Soil 3d rate.

——West on 115th Mile——

Variation 13° 55′ East.

19.50 Top of mountain spur, bears North.

69.00 Leave 2nd rate Pine timber and enter Prairie valley, bears North.

77.00 Creek 6 lks. wide, clear water, gentle currenty, stony bottom, course S S W

80.00 Offset from tangent 9.50 chs. to Parallel to 115th mile temporary corner.
Surface broken.
Soil 3d rate.

Astronomical monument No. 4 is 8.12 chs. East and 4.50 chs. North of 115th mile corner. I therefore make a correction of 12.5 lks. per mile.
Moved temporary corner 4.50 chs. North and set true corner.
Marked stone 7x5x4 -115M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sandstone 22x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -115M- respectfully.
No natural objects near.

——East on 114th Mile——

Variation 13° 50′ East.

80.00 Moved temporary corner 4.37.2 chs. North, and set true corner.
Marked stone 5x5x4 -114M- and deposited it 3½ feet in earth. Built conical mound of stone and earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x20x16, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -114M- respectively.
No natural objects near.

——East on 113th Mile——

Variation 13° 50′ East.

80.00 Moved temporary corner 4.24.5 chs. North and set corner.

CHAINS

Marked stone 8x6x3 -113M- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound; 2 feet square and 18 in. deep. Set sand stone 26x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -113M- respectively. From which point

A Pine tree, 18 in. dia. bears S 15 W., 56 lks. dist.
A pine tree, 18 in. dia. bears N 7 E., 134 lks. dist.

——East on 112th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 4.11.8 chs. North and set true corner.

Marked stone 9x9x4 -112M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 38x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -112M- respectively. From which point

A pitch pine tree, 10 in. dia., bears S 17 W., 57 lks. dist.
A pitch Pine tree, 14 in. dia., bears N. 20 E., 42 lks. dist.

——East on 111th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 3.99.1 chs. North and set true corner.

Marked stone 9x6x3 -111M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x14x3, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -111M- respectively. From which point.

A pine tree, 30 in. dia., bears S 4 W., 25 lks., dist.
A pine tree, 30 in. dia., bears N 3 E., 138 lks. dist.

——East on 110th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 3.86.4 chs. North and set true corner.

Marked stone 9x6x3 -110M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 34x12x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -110M- respectively. From which point

A pitch Pine tree, 20 in. dia., bears S 6 W., 118 lks. dist.
A pitch Pine tree, 15 in. dia., bears N 62 W., 213 lks. dist.

——East on 109th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 3.73.6 chs. North and set true corner.

Marked stone 9x6x3 -109M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x8x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -109M- respectively. From which point

A double Pine tree, 24 in. dia., bears North 130 lks. dist.
A pine tree, 20 in. dia., bears S 17 E., 61 lks. dist.

——East on 108th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 3.60.9 chs. North and set true corner.

Marked stone 12x5x4 -108M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x9x4., projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -108M- respectively. From which point

A pitch pine tree, 10 in. dia., bears N 29 W., 8 lks. dist.
A pitch pine tree, 10 in. dia., bears S 29 E., 6 lks. dist.

——East on 107th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 3.48.2 chs. North and set true corner.

Marked sand stone 7x6x3 -107M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound.

CHAINS

2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -107M- respectively. From which point
A double Pine tree, 24 in. dia., bears North, 130 lks. dist.
A pine tree, 20 in. dia., bears S 17 E., 61 lks. dist.

——East on 106th Mile——

Variation 13° 50′ East.

80.00 Moved temporary corner 3.35.5 chs. North and set true corner.
Marked sand stone 6x6x3 -106M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16x12x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -106M- respectively. From which point
A pine tree, 16 in. dia., bears S 10 W., 115 lks. dist.
A pine tree, 14 in. dia., bears N. 12 E., 104 lks. dist.

——East on 105th Mile——

Variation 13° 50′ East.

80.00 Moved temporary corner 3.22.8 chs. North and set true corner.
Marked sand stone 13x5x3 -105M- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x 8x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -105M- respectively.
From which point
A pine tree, 16 in. dia., bears N 10 E, 69 lks. dist.
A pine tree, 18 in. dia bears N 14 E, 56 lks. dist.

——East on 104th Mile——

Variation 13° 50′ East.

80.00 Moved temporary corner 3.10.0 chs. North and set true corner.
Marked stone 10x10x3 -104M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from

CHAINS

base of mound, 2 feet square and 18 in. deep. Set sand stone 30x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -104M- respectively.
From which point
A pine tree, 14 in. dia., bears N 45 E, 60 lks. dist.
A Fir tree, 13 in. dia., bears S 35 W, 11 lks. dist.

——East on 103d Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 2.97.3 chs. North and set true corner.
Marked sand stone 8x6x3 -103M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -103M- respectively.
From which point
A Pine tree, 29 in. dia., bears N 40 E, 155 lks. dist.
No other tree near.

——East on 102nd Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 2.84.6 chs. North and set true corner.
Marked sand stone 10x8x3 -102M- and deposited it, 3 feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x13x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -102M- respectively.
From which point
A Norway Pine tree, 50 in. dia., bears S 49 W., 69 lks. dist.
A Pine tree, 28 in. dia., bers S 49 W., 69 lks. dist.

——East on 101st Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 2.71.9 chs. North, and set true corner.
Marked stone 12x10x4 -101M- and deposited it 3' in earth. Built conical mound of earth, 4 feet hig same. Dug pits, 10 lks East and West, from base of.

CHAINS

2 feet square and 18 in. deep. Set sand stone, 20x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -101M- respectively. From which point

A Pine tree, 24 in. dia., bears N 13 W., 57 lks. dist.

A Pine tree, 18 in. dia., bears S 15 E., 60 lks. dist.

——East on 100th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner 2.59.2 chs. North and set true corner.

Marked stone 12x20x4 -100M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -100M- respectively. From which point

A Pine tree, 14 in. dia., bears S 4 W., 14 lks. dist.

A pine tree, 18 in. dia., bears N 8 W., 109 lks. dist.

——East on 99th Mile——

Variation 13° 50' East.

80.00 Moved temporary corner, 2.46.4 chs. North and set true corner.

Marked stone 6x6x2 -99M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x13x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -99M- respectively. From which point a

Pine tree, 22 in. dia., bears S 10 W., 28 lks. dist.

Pine tree, 22 in. dia., bears N 9 E., 26 lks. dist.

——East on 98th Mile——

Variation 13° 49' East.

80.00 Moved temporary corner, 2.33.7 chs. North and set true corner.

Marked stone 10x6x3 -98M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x5, projecting 8 in. above mound, marked on the North, South,

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West and East sides -C- -NM- -1868- -98M- respectively.
From which point
A Pine tree, 13 in. dia., bears N 18 E., 96 lks. dist.
A Pine tree, 12 in. dia., bears S 13 W., 96 lks. dist.

—East on 97th Mile—

Variation 13° 49' East.

80.00 Moved temporary corner 2.21.0 chs. North and set true corner.
Marked sand stone 6x5x4 -97M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x7x7, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -97M- respectively.
From which point
A Pine tree, 16 in. dia., bears S 27 W., 37 lks. dist.
A Pine tree, 13 in. dia., bears N 27 E., 93 lks. dist.

—East on 96th Mile—

Variation 13° 48' East.

80.00 Moved temporary corner 2.08.3 Chs. North and set true corner.
Marked sand stone 6x6x3 -96M- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -96M- respectively.
From which point
A Pine tree, 24 in. dia., bears S 40 W., 38 lks. dist.
A Pine tree, 18 in. dia., bears N. 65 W., 146 lks. dist.

—East on 95th Mile—

Variation 13° 49' East.

80.00 Moved temporary corner 1.95.6 Chs. North and set true corner.
Marked stone 6x5x3 -95M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -95M- respectively.
From which point

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A Pine tree, 18 in. dia., bears S 13 W. 111 lks. Dist.
A Pine tree, 18 in. dia., bears N 5 W. 36 lks. dist.

——East on 94th Mile——

Variation 13° 49′ East.

80.00 Moved temporary corner 1.82.8 Chs. North and set true corner.

Marked sand stone 7x6x3 -94M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x13x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -94M- respectively. From which point

A Pine tree, 14 in. dia., bears S 12 W., 112 lks. dist.
A Pine tree, 24 in. dia., bears N 12 E., 138 lks. dist.

——East on 93d Mile——

Variation 13° 46′ East.

80.00 Moved temporary corner 1.70.1 Chs. North and set true corner.

Marked stone 6x6x3 -93M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x14x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -93M- respectively. From which point

A Pine tree, 14 in. dia., bears N 54 W., 37 lks. dist.
A Pine tree, 20 in. dia., bears S 35 W., 63 lks. dist.

——East on 92nd Mile——

Variation 13° 46′ East.

80.00 Moved temporary corner 1.57.4 Chs. North and set true corner.

Marked stone 8x6x3 -92M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -92M- respectively. No natural objects near.

CHAINS.

——East on 91st Mile——

Variation 13° 45' East,

80.00 Moved temporary corner 1.44.7 chs. North and set true corner on side hill.

Marked stone 6x5x3 -91M- and deposited it, one foot in earth. Set sand stone, 24x12x4 over same, marked on the North, South, West and East sides -C- -NM- -1868- -91M-. No mound, no pits.

From which point

A Pine tree, 20 in. dia., bears S 18 W., 70 lks. dist.

A Pine tree, 18 in. dia., bears N 37 E., 50 lks. dist.

——East on 90th Mile——

Variation 13° 45' East.

80.00 Moved temporary corner 1.32.0 chs. North and set true corner.

Marked stone 10x8x3 -90M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set sand stone 36x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -90M- respectively.

From which point

A Pine tree, 20 in. dia., bears S 18 W. 70 lks. dist.

A Pine tree, 18 in. dia., bears N 37 E. 50 lks., dist.

——East on 89th Mile——

Variation 13° 45' East.

80.00 Moved temporary corner 1.19.2 chs. North and set true corner.

Marked stone 8x6x3 -89M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -89M- respectively.

No natural objects near.

——East on 88th Mile——

Variation 13° 45' East.

80.00 Moved temporary corner 1.06.5 chs. North and set true corner, on side of bluff.

Marked stone 5x5x4 -88M- and deposited it, 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound,

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2 feet square and 18 in. deep. Set sand stone 30x8x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -88M- respectively. No natural objects near.

——East on 87th Mile——

Variation 13° 44' East.

80.00 Moved temporary corner 93.8 lks. North and set true corner.

Marked sand stone 13x5x3 -87M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -87M- respectively.

From which point

A Pine tree, 8 in. dia. bears S 19 W. 42 lks. dist.

A Pine tree, 24 in. dia. bears N 21 E., 101 lks. dist.

——East on 86th Mile——

Variation 13° 41' East.

80.00 Moved temporary corner 81.1 lks. North and set true corner.

Marked stone 6x6x4 -86M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x12x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -86M- respectively.

From which point

A yellow Pine tree, 16 in. dia., bears N 58 E., 72 lks. dist.

A yellow Pine tree, 16 in. dia. bears S 58 W., 18 lks. dist.

——East on 85th Mile——

Variation 13° 38' East

80.00 Moved temporary corner 68.4 lks. North, and set true corner

Marked sand stone 12x6x4 -85M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set sand stone 20x10x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -85M- respectively.

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From which point
A Pine tree, 24 in. dia. bears N 22 E., 140 lks. dist.
A Pine tree, 14 in. dia. bears S 26 W., 60 lks. dist.

——East on 84th Mile——

Variation 13° 38′ East.

80.00 Moved temporary corner 55.6 lks. North and set true corner, on side hill, facing the North.
Marked sand stone 8x6x2 -84M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -84M- respectively.
From which point
A Pine tree, 20 in. dia., bears N. 10 E. 10 lks. dist.
A Pine tree, 14 in. dia., bears S. 13 E., 32 lks. dist.

——East on 83d Mile——

Variation 13° 37′ East.

80.00 Moved temporary corner 42.9 lks. North and set true corner.
Marked stone 10x6x3 -83M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18x8x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -83M- respectively.
From which
A Pine tree, 12 in. dia., bears N. 12 W. 64 lks. dist.
A Pine tree, 14 in. dia., bears S. 12½ W. 47 lks. dist.

——East on 82nd Mile——

Variation 13° 33′ East.

80.00 Moved temporary corner 30.2 lks. North and set true corner.
Marked stone 12x10x3 -82M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x8x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -82M- respectively.
From which
A yellow Pine tree, 12 in. dia. bears N 5 E., 95 lks. dist.
A yellow Pine tree, 18 in. dia. bears S 13 W., 190 lks. dist.

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——East on 81st Mile——

Variation 13° 35′ East.

8000 Moved temporary corner 17.5 lks. North and set true corner.

Marked stone 6x3x2 -81M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -81M- respectively. From which point

A white Pine tree, 18 in. dia. bears S 10 W. 27 lks. dist.
A white Pine tree, 18 in. dia. bears N 14 E. 96 lks. dist.

——East on 80th Mile——

Variation 13° 35′ East.

8000 Moved temporary corner 4.8 lks. North and set true corner. Marked stone 6x5x4 -80M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -80M- respectfully. No natural objects near.

Observations for asimuth at astronomical monument No. 4 on d Ursae Minoris. Dec. 86° 36′ 42″.4. R.A. 18h 14m 51.5, and 51 Cephei Dec. 87° 14′ 05″.6. R.A. 6h 37m 39. Aug. 27, 1868. Chronometer fast at mean noon, on Solar time, 5h 48m 20.8 with a loosing rate of 2.2s per day.

	h	m	s
Chronometer time of observation of Ursae Minoris, upper transit	1	36	45
Chron— time of observation of 51 Cephei	1	59	17
Chronometer interval		22	32
Chronometer rate			0.3
Reduction to Sidereal time			03.7
Difference in time of upper and lower transit		22	36

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Difference in lower and upper Culminations as shown in Nautical Almanac 22. 47.5

Difference of observed time, minus difference of right assension 11.5

—Computation—

A. 11'.5=1725	Log =2.236780	Magnetic Va
Cos d 86° 36' 42"=	8.771681	13° 50' East
Cos d 87° 14' 05"=	8.683359	Error of asi-
Sec 37°=	0.097651	muth 5.75s
Cosec 6° 06' 13"=	0.060827	—0.759307

——West on 116th Mile——

Variation 13° 50' East.

8.00 Indian trail, bears SW.

50.00 Valley, bears South.

63.50 Creek, 35 lks. wide, clear water, 8 in. deep, swift current, stony bottom, course S S E.

80.00 Offset from tangent to Parallel, to 116th mile corner, a large sand stone boulder, 5x4x2½ feet above surface, marked on the North, South, West and East sides -C- -NM- -1868- -116M- respectively.

From which point

A large sand stone boulder 15x10x4 feet bears N 60 E. 42 lks. dist.

Surface broken.

Soil in valley 1st rate.

Balance 2nd rate.

——West on 117th Mile——

Variation 13° 50' East.

20.00 Top of mountain ridge, bears S S W.

42.00 Snowy Peak, bears N 32 W.

75.75 Creek 10 lks. wide, clear water, swift current, stony bottom, course SW.

77.10 Creek, 2 lks. wide, swift current, clear water, gravelly bottom, course S W.

80.00 Offset from tangent to Parallel to 117th mile corner.

Marked sand stone 8x6x4 -117M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound, marked on

CHAINS

the North, South, West and East sides -C- -NM- -1868- -117M- respectively

From which point

A pine tree, 18 in. dia. bears N 10 E. 93 lks. dist.

A Pine tree, 20 in. dia., bears S 11 E. 173 lks. dist.

Surface mountainous and stony, covered with 3d rate Pine timber and an undergrowth of Oak and Aspen brush.

Soil 3d rate.

——West on 118th Mile——

Variation 12° to 15° East.

18.25 Creek, 40 lks. wide, clear water, about 8 in. deep, rapid current, gravelly and stony bottom, course E S E.

32.50 Canon, 2 chs. wide, bears NE. A creek about 6 feet North of line.

41.00 Creek in deep canon, 5 lks. wide, rapid current, course E N E.

80.00 Offset from tangent to Parallel, to 118th mile corner.

Marked stone 11x6x3 and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x12x7 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -118M- respectively.

No natural objects near.

General surface mountainous, covered with 2nd rate Pine timber and brush.

Soil 1st and 2nd.

Aug. 28th. Measuring chain compared with standard and found correct

——West on 119th Mile——

Variation 13° to 15° 30′ East.

13.00 Top of ridge, bears S 10 E.

51.00 Enter marsh, bears SW.

66.00 Creek, 3 lks. wide, clear water, rapid current, course N N W.

80.00 Offset from tangent to Parallel, to 119th mile corner in thick fallen timber.

Deposited charred block 6x6x4—3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, three feet in ground, project-

CHAINS

ing 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -119M- respectively.
No natural objects near.
Surface broken, covered with thick fallen timber and an undergrowth of Aspen, Fir and Pine brush.
Soil 3d rate.

——West on 120th Mile——

Variation 13° 55′ East.

40.00 Top of ridge, bears S S W.

56.00 Leave fallen timber and enter Prairie, bears S S E.

79.50 Enter young growth of Pine and Fir timber, bears SW.

80.00 Offset from tangent to Parallel to 120th mile corner, in small grove. Marked stone 8x6x4 -120M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x14x7, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -120M- respectively. From which point
A fir tree 18 in. dia., bears S 22 E, 15 lks. dist
A fir tree, 8 in. dia., bears N 8 E, 68 lks. dist.
Surface broken, 1st 56 chs. covered with fallen timber and small aspen and fir timber, balance open prairie.
Soil 2nd rate.

——West on 121st Mile——

Variation 13° 50′ East.

1.00 Leave small grove of timber, bears SE., and enter prairie valley.

80.00 Offset from tangent to Parallel to 121st mile corner. Marked stone 10x4x4 -121M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x17x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -121M- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 2nd rate.

——West on 122nd Mile——

Variation 13° 55′ East.

25.00 Enter slough, covered with willow brush bears South.

CHAINS

33.50 Leave slough, bears SW.

80.00 Offset from tangent to Parallel, to 122nd mile corner. Marked stone 10x7x3 -122M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set iron stone 36x15x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -122M- respectively. No natural objects near.
Surface Prairie, gradually descending to the South and West.
Soil 1st rate.

——West on 123d Mile——

Variation 13° 50′ East.

6.50 Indian trail, bears NW.

11.80 Creek, 8 lks. wide, clear water, rapid current, stony bottom, course SE.

20.00 Enter scattering 2nd rate Pine and Aspen timber, bears North and South.

80.00 Offset from tangent to Parallel, to 123d mile corner. Deposited charred block, 10x6x4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -123M- respectively.
No natural objects near.
Surface mountainous, covered with Aspen and Pine brush.
Soil 2nd rate.
Aug. 29th. Measuring chain compared with standard and found correct.

——West on 124th Mile——

Variation 13° 50′ East.

80.00 Place for 124th mile corner on side of mountain.
Impossible to establish it.
Surface mountainous, covered with stone.
Soil 3d rate.

——West on 125th Mile——

Variation 13° 50′ East.

CHAINS

4.00 Foot of snowy mountain ridge, bears South.

52.00 Summit of snowy mountain ridge, bears S S E.

55.00 Built conical witness mound of stone 4 feet high, set sand stone 20x10x8, marked on the North -C- South -NM- West -1868-.

80.00 Offset from tangent to Parallel to 125th mile corner. Deposited stone 10x6x4 -125M- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set quartz stone 23x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -125M- respectively.

No natural objects near.

Surface mountainous and stony, with some prairie land.

Soil 3d rate.

——West on 126th mile——

Variation 13° 50' East.

10.00 Enter 2nd rate pinon, pine timber, bears N and S.

23.50 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course S S W.

30.00 Leave timber, bears W N W.

80.00 Offset from tangent to Parallel, to 126th mile corner. Marked stone 10 x 6 x 3 -126M- and deposited it, 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set quartz stone 20 x 12 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -126M- respectfully.

No natural objects near.

Surface broken, covered with stone and sand quartz.

Soil 3d rate.

——West on 127th mile.——

Variation 13° 50' East.

64.00 Creek, in canon, 1,000 feet deep.

80.00 Place for 127th mile corner, on side of cliff, impossible to establish corner.

Surface mountainous and stony, mostly sand stone quartz.

Soil 3d rate.

Aug. 30th. Measuring chain compared with standard and found correct.

CHAINS

——West on 128th mile——

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel, to 128th mile corner.
Marked stone 10x6x3 -128M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x8 projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -128M- respectively.
No natural objects near.
Surface mountainous and stony, covered with aspen and Pine brush.
Soil 3d rate.

——West on 129th mile——

Variation 13° 50′ East.

30.00 Foot of mountain, ridge bears NW.

80.00 Offset from tangent to Parallel, to 129th mile corner.
Marked stone 10x6x5 -129M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x8x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -129M- respectively.
From which point
A Pine tree, 24 in. dia. bears S 72 E, 51 lks. dist.
A Pine tree, 24 in. dia. bears N 60 W, 35 lks. dist.
Surface mountainous and stony.
Soil 3d rate.

——West on 130th mile——

Variation 13° 50′ East.

13.00 Leave timber, and enter sage brush, Prairie bears North.

79.50 Enter canon, bears NW.

80.00 Offset from tangent to Parallel, to 130th mile corner.
Marked stone 10x6x4 -130M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -130M- respectively.

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From which
A Pine tree, 30 in. dia. bears S 35 E. 184 lks. dist.
No other tree near
Surface rolling.
Soil 3d rate.

——West on 131st mile——

Variation 13° 50′ East.

1.50 Leave canon, bears NW.

30.00 Enter pinion Pine and volcanic stone region.

51.40 Leave same and enter valley, bears N and S.

73.00 Creek, 4 lks. wide, stony bottom, course N N W.

80.00 Offset from tangent to Parallel, to 131st mile corner, on bank of creek, 4 lks. wide, clear water, gentle current, sandy bottom, course N N W. Marked stone 6x4x3 -131M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set granite stone 20x10x8 projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -131M- respectively.
No natural objects near.
Surface rolling.
Soil 3d rate.

——West on 132nd mile——

Variation 13° 50′ East.

5.00 Creek, 10 lks. wide, low banks, clear water, swift current, stony bottom, course North.
An old cabin about 3 chs. North.

80.00 Offset from tangent to Parallel to 132nd mile corner. Marked volcanic stone 12x6x4 -132M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set pitch Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -132M- respectively.
No natural objects near.
Surface, gradual descent to West and NW.
Soil 3d rate, covered with gravel, washed from the mountains and sage brush.

CHAINS.

——West on 133d mile——

Variation 11° 50′ East.

67.00 Top of volcanic hill, covered with stone.

Variation 18° East.

80.00 Offset from tangent to Parallel, to 133d mile corner. Marked stone 12x6x4 -133M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x8x7, projecting 8 ins. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -133M- respectively. From which point a

Snow peak, bears S 15 W.

Conical Peak, in valley, bears S 72 W.

Conical Peak, in mountains, bears N 67 E.

Surface gently rolling.

Soil 2nd rate.

Aug. 31st. Measuring chain compared with standard and found correct.

——West on 134th mile——

Variation (at corner) 12° East.

Variation 11 chs. West 13° East.

20 chs. West 13° 50′ East.

77.50 Road leading to deserted cabins near base of mountains, bears SW.

80.00 Offset from tangent to Parallel, to 134th mile corner. Marked stone 10x6x3 -134M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -134M- respectively. No natural objects near.

Surface gently rolling, covered with sage brush.

Soil 2nd rate.

——West on 135th mile——

Variation 13° 50′ East.

41.00 Road bears SW.

80.00 Offset from tangent to Parallel to 135th mile corner. Marked stone 6x4x3 -135M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

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same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -135M- respectively.
No natural objects near.
Surface gently rolling.
Soil 3d rate.

——West on 136th mile——

Variation 13° 50′ East.

2.00 Road from San Francisco Col. to La Costilla, N. M. bears W S W.

30.00 Enter pinion Pine timber, bears S S W.

38.00 Top of ridge, covered with volcanic stone.

45.00 Leave scattering pinion Pine timber, bears S S W.

52.00 Road from San Francisco, Col. to San Costiall, N. M. bears W N W.

52.60 Enter scattering pinion Pine timber, bears W N W.

80.00 Offset from tangent to Parallel to 136th mile corner. Marked volcanic stone 8x6x4 -136M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x16x12, projecting 8 in. above mound, marked on the North, South, West and East Sides -C- -NM- -1868- -136M- respectively.
No natural objects near.
Surface broken. The last 50 chs. mostly covered with pinion, Pine timber and volcanic stone.
Soil 3d rate.

——West on 137th mile——

Variation 13° 50′ East.

12.00 Leave scattering pinion Pine timber and enter valley, bears North.

47.00 American flag in front of Meyer & Co's store and P. O. in centre of village of La Costilla, N. M., bears S 52 W.

52.50 Canal for irrigation, couse NW.

63.25 Canal for irrigation, course NW.

80.00 Offset from tangent to Parallel, to 137th mile corner. Marked volcanic stone 7x6x3 -137M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high,

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over same. Dug pits 10 lks. East & West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x8x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -137M- respectively.
No natural objects near.
Surface level valley, covered with sage brush.
Soil 2nd rate.

——West on 138th mile——

Variation 13° 50' East.

18.00 Canal for irrigation, course N N W.
47.50 Road from La Costilla, N. M. to Fort Garland, Col. bears North. Baldy mountain near Fort Garland bears 4 E. American flag in front Meyer & Co's store and P. O. in centre of Village of La Costilla, N. M. bears S 2 W.
56.50 Canal for irrigation, course North.
58.70 Canal for irrigation, course North.
62.00 Rio Costilla, 75 lks. wide, clear water, rapid current, stony bottom, course N 10 W
63.75 Road, bears North.
74.50 Road from La Costilla to Conejos, Col, bears N N W.
80.00 Offset from tangent to Parallel to 138th mile corner. Marked stone 10x6x4 -138M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x18x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -138M- respectively.
No natural objects near.
Surface level, covered with sage brush and various kinds of cactus.
Soil 3d rate.
Note: The village of La Costilla, N. M. at this point is divided by the line, leaving nearly ¾ of it in N. M.

——West on 139th mile——

Variation 13° 50' East.

70.50 Road leading to base of Ute Mountain, bears W S W.
86.00 Offset from tangent to Parallel to 139th mile corner on NW side of road. Marked stone 10x6x4 -139M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and

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West from base of mound, 2 feet square and 18 in. deep.
Set volcanic stone 30x14x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -139M- respectively.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate and gravelly.
Sept. 1st. Measuring chain compared with standard and found correct.

——West on 140th mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel, to 140th mile corner.
Marked stone 6x6x4 -140M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set volcanic stone 20x8x8 projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -140M- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil gravelly, 3d rate.

——West on 141st mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel, to 141st mile corner.
Marked stone 8x6x4 -141M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x16x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -141M- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

——West on 142nd mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 142nd mile corner.
Marked stone 6x6x4 -142M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of

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mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -142M- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate and gravelly.

——West on 143d mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel, to 143 mile corner.
Marked stone 5x4x3 -143M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -143M- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

——West on 144th mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 144th mile corner.
Marked stone 6x4x3 -144M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set volcanic stone 24x10x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -144M- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

——West on 145th mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 145th mile corner.
Marked stone 6x5x3, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x13x7, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -145M- respectfully.

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No natural objects near
Surface level, covered with sun flowers and cactus
Soil 2nd rate

——West on 146th mile——

Variation 13° 50' East

80.00 Offset from tangent to Parallel to 146th mile corner
Marked stone 6x4x3 -146M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -146M- respectfully
From which 36 ant
Ute mountain, bears South
Baldy mountain, near Fort Garland, bears N 74½ E
Two mountain Peaks, down valley connected by a ridge
East, bears S 8 41 W
Mountain ridge, bears S 64W about 2 miles dist
Mountain Peak, bears S 64 E
Mountain Peak, bears S 32½ E
Surface level, covered with sage brush
Soil 3rd rate

——West on 147th Mile——

Variation 13° 50' East

51.00 Bend in creek, 50 lks. wide, clear water, rapid current, gravelly bottom, course W S W and W N W

59.00 Rio Costilla, 100 lks. wide, low banks, clear water, rapid current, gravelly bottom, course S S W

80.00 Offset from tangent to Parallel to 147th mile corner
Marked stone 6x4x3 -147M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -147M- respectfully
No natural objects near
Surface nearly level
Soil 3d rate gravelly

——West on 148th Mile——

Variation 13° 45' East

70.15 Offset from tangent to Parallel, 8.27.3 lks. North to As-

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tronomical Monument No. 2 which is represented by a volcanic cobble stone mound, 8 feet at base, 4½ feet high, and 3½ feet at top Set volcanic stone 30×12×12, marked on the North "Colorado" South "New Mexico" East "37 NL" West "1868" on bank of Rio Grande

Sept 2nd Measuring chain compared with standard and found correct

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Observations for Azimuth at Astronomical Monument No. 2, on d Ursae Minoris Dec 86° 36' 43", R A 8h 14m 34s, and 51 Cephei Dec 87° 14' 04" 1, R A 0h 37m 43.8s Sept 5th, 1868 Chronometer fast at mean noon, on Solar time 3h 49m 34s, with a loosing rate of 12s per day

	h	m	s
Chronometer time of observations of d Ursae Minoris, upper transit	10	03	00
Chron time of observations of 51 Cephei	10	25	44
Chronometer interval		22	44
Chronometer rate			0.23
Reduction to Sidereal time			3.61
Difference in time of upper and lower transit		22	47.86
Difference in time of upper and lower culminations as shown in Nautical Almanac		22	52
Difference of observed time, minus difference of right assension			4.14

Computation—

A—4.14e 62.1s	Log	0.179300
Cos. d 86° 36' 43"		8.773060
Cos. d 87° 14' 04"		8.683060
Sec. e 37	Log	0.090765
Cosec 6.6613		0.086882
Error of asimuth 2.07"		0.317722

——West on 148th Mile——

Variation 2° East

West from Astronomical Monument No. 2 which is 70.15 chs. West from 147th mile corner

173 Rio Grande, course SE, general course S S E It flows through a most regular perpendicular canon, composed of

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volcanic rock 70 feet below the common level of the country. It retains the sameness of width and depth for many miles and nothing whatever indicates its existence, until arriving at its edge, the deep abyss below is first discovered. It has a swift current, about 6 miles per hour, clear water, rocky bottom and its average depth, about 5 feet.

9.85 Place for 148th mile corner in river and impossible to establish it.
Surface level.
Soil 3rd rate.

——West on 149th Mile——

Variation.
From a point on West bank of Rio Grande on line 1 formed a right angle triangle ABC, measured angles A=90 B 66° 35', hence the angle C=23° 25', measured side AB= 5 chs.
Point C Astronomical Mo nent.

Sin. 23 25' =		9.599244
Sin. 66 35' =		9.962672
Log. 5 chs. =		0.698970
	11.34.5 chs.	1.062398

Therefore 1.79½ lks. over Rio Grande.
Variation at this point 2° East, at a point 5 chs. South 20° East.

80.00 Offset from tangent to Parallel to 149th mile corner.
Marked volcanic stone 8x7x4 -149M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -149M- respectfully.
No natural objects near.
Surface gently rolling, covered with volcanic stone.
Soil 2nd rate.

——West on 150th Mile——

Variation (at corner) 12° 50' East.

80.00 Offset from tangent to Parallel, to 150th mile corner.
Marked stone 6x6x6 -150M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over

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same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22x8x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -150M- respectively. Variation changes from 12° 50' to 14° East.
Surface gently rolling, covered with volcanic stone and gravel.
Soil 3d rate.
Sept. 6th. Measuring chain compared with standard and found correct.

——West on 151st Mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel, to 151st mile corner.
Marked stone 8x6x4 -151M- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -151M- respectively.
Va changeable, on line.
From which
A conical mound bears N 35 E, 40 chs. dist.
Ute Mountain, bears S 52 E.
Conical Peak, bears S 4 E.
High point on mountain ridge bears S 12 E 18 miles dist.
Mountain ridge, bears S 5 W.
Conical Peak, bears S 15 W.
Conical Peak, on mountain ridge bears S 22 W., 30 miles dist.
Surface gently rolling, covered with volcanic stone and gravel.
Soil 3d rate.

——West on 152nd Mile——

Variation 12° East.

60.00 Foot of mountain ridge, 800 feet high, bears S S E.

80.00 Offset from tangent to Parallel, to 152nd mile corner, on top of mountain ridge.
Marked volcanic stone 10x6x4 -152M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set volcanic

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stone 30x14x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -152M- respectively.
No natural objects near.
Variation 12° East.
Surface except mountain ridge rolling, covered with volcanic stone.
Soil 3d rate.

——West on 153d Mile——

Variation 12° East.

30.00 Leave mountain ridge and enter valley, bears NW.

80.00 Offset from tangent to Parallel to 153d mile corner.
Marked stone 8x6x4. -153M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x10x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -153M- respectively.
No natural objects near.
Surface except ridge, gently rolling.
Soil 2nd rate.

——West on 154th Mile——

Variation 13° East.

80.00 Offset from tangent to Parallel to 154th mile corner.
Marked stone 8x8x3 -154M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set volcanic stone 30x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -154M- respectively.
No natural objects near.
Surface gently rolling Prairie covered with stone.
Soil 3d rate.
Sept. 7th. Measuring chain compared with standard and found correct.

——West on 155th Mile——

Variation 12° 50′ East.

80.00 Offset from tangent to Parallel, to 155th mile corner.
Marked stone 6x6x4 -155M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound,

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2 feet square and 18 in. deep. Set volcanic stone 48x13x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM -1868- -155M- respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and volcanic stone.
Soil 3d rate.

——West on 156th Mile——

Variation 13° 20' East.

80.00 Offset from tangent to Parallel to 156th mile corner.
Marked stone 10x10x6 -156M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 16x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -156M- respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and volcanic stone.
Soil 3d rate.

——West on 157th Mile——

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 157th mile corner.
Marked stone 8x6x4 -157M- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x12x6, projecting 8 in. above mound marked on the North, South, West and East sides -C- -NM- -1868- -157M- respectively.
No natural objects near.
Surface gently rolling, covered with volcanic gravel, sage brush and weeds.
Soil 3d rate.

——West on 158th Mile——

Variation 13° 20' East.

41.00 A stone mound, about 4 feet at base and 2½ feet high, bears South 475 lks. No marks discovered on it, and supposed to have been placed there by some former surveying party.

80.00 Offset from tangent to Parallel to 158th mile corner.
Marked stone 8x6x4 -158M- and deposited it, 3½ feet in

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earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -158M- respectively. No natural objects near.

Surface gently rolling, covered with volcanic gravel and stone.

Soil 3d rate.

Sept. 8th. Measuring chain compared with standard and found correct.

——West on 159th Mile——

Variation 13° 20' East.

80.00 Offset from tangent to Parallel, to 159th mile corner. Marked stone 5x5x4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -159M- respectively. From which point a

Mound, bears N 9 E, 2 miles distant.

Point of mountain ridge, bears N 17 E 8 m dist.

Point of mountain ridge, near Rio Grand bears N 67 E. 11 miles dist.

Ute mountain, bears S 75 E.

Conical Peak on San Antonio Mountain bears S. 30 W.

Mountain Peak, bears N 70 W, 14 miles dist.

Surface gently rolling, covered with stone, sage brush and weeds.

Soil 3d. rate.

——West on 160th Mile——

Variation 13° 40' East.

80.00 Offset from tangent to Parallel to 160th mile corner. Marked stone 10x6x3 -160M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone, 24x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -160M- respectively. No natural objects near.

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Surface gently rolling.
Soil 3d. rate.

——West on 161st. Mile——

Variation 13° 40' East.

80.00 Offset from tangent to Parallel, to 161st mile corner. Marked stone 12x6x6 -161M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -161M- respectively. No natural objects near.
Surface gently rolling prairie.
Soil 3d rate.

——West on 162nd Mile——

Variation 13° 40' East.

39.40 Road leading from Conejos Col. to Santa Fe, N. M. bears North and South. Built witness mound of earth, and set volcanic stone 18x12x4, marked on the North -C- South -NM- West -1868-. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.

80.00 Offset from tangent to Parallel, to 162nd mile corner. Marked stone 8x6x4 -162M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x12x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -162M- respectively. No natural objects near.
Surface gently rolling, covered with sage brush and weeds.
Soil 3rd rate.

——West on 163d Mile——

Variation 13° 40' East.

~~74.75 A mound bears S 8 E.~~
A mound, bears S 10 E.

80.00 Offset from tangent to Parallel, to 163d mile corner. Marked stone 10x6x4 and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x16x4, projecting 6 in. above mound, marked on the North, South,

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West and East sides -C- -NM- -1858- -163M- respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and weeds
Soil 3d. rate.

——West on 164th Mile——

Variation 13° 40' East.

65.40 Road, bears North and South. Built witness mound of earth, 4 feet high. Set volcanic stone 14x6x5, projecting 6 in. above mound, marked on the North, South and West sides -C- -NM- -1868- respectfully.

80.00 Offset from tangent to Parallel to 164th mile corner. Marked stone 6x6x3 -164M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 16x8x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -164M- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 3d. rate.

——West on 165th Mile——

Variation 13° 20' East.

30.50 Road bears NW and SE.
73.80 Top of bluff, bears N N E.
76.00 Canon, bears North.
79.50 Leave canon, bears North
80.00 Offset from tangent to Parallel to 165th mile corner, on side of hill.
Marked stone 6x6x3 -165M- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -165M- respectively.
No natural objects near.
Surface gently rolling, covered with volcanic stone, sage brush and weeds.
Soil 3d. rate.
Sept. 9th. Measuring chain compared with standard and found correct.

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——West on 166th Mile——

Variation 13° 20' East.

37.50 Top of hill, Village of San Antonio, bears N 18 E.

37.50 Top of bluff, 300 feet high, bears N 30 E.

Variation 13° 20' East.

San Antonio Village, bears N 83 E and N. 32 W.

San Antonio Peak bears S 8 E.

Mountain peak, bears S 8 W-S 12 W-N 55 W.

Mountain Peak bears N 6 E.

41.50 Base of bluff, a creek, 90 lks. wide, clear water, 6 in. deep, rapid current, gravelly bottom, course North.

42.50 Enter bottom, covered with willow brush and scattering cottonwood trees, bears S S E. An old sheep corral just south of line.

Variation (in bottom) 13° 51' East.

43.00 Rio San Antonio, 50 lks. wide, clear water, rapid current, stony bottom, course North.

80.00 Offset from tangent to Parallel to 166th mile corner, in bottom.

Marked stone 6x6x3 -166M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- 166M- respectively.

From which

A cottonwood tree, 14 in. dia., bears S 40 E., 105 lks. dist.

No other tree near.

Soil in valley 1st rate.

Surface except ridge, level.

——West on 167th Mile——

Variation 13° 50' East.

39.00 Rio Las Pinos, 70 lks. wide, clear water, 20 in. deep, swift current, stony bottom, course E N E.

Leave willow brush and cottonwood timber.

50.00 Canal for irrigation, 10 lks. wide, now dry.

74.50 Canal for irrigation, 15 lks. wide, and enter recently cultivated fields, bearing North.

80.00 Offset from tangent to Parallel, to 167th mile corner.

Marked stone 6x4x3 -167M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone, 24x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -167M- respectively. No natural objects near.
Surface level bottom.
Soil 1st rate.

——West on 168th Mile——

Variation 13° 50' East.

0.50 Leave field, bears NW.

33.00 Leave bottom, bears SW and North.

43.00 Top of bluff, 350 feet high, 25 feet from summit, it becomes perpendicular—covered with volcanic rock, bears SW and North.
Village of San Antonio, bears S 60 E.
Variation 10° East.
3 chs. West 16° East.

59.00 Wood road, bears NW.

63.50 Enter scattering pinion Pine timber, bears NW.

80.00 Offset from tangent to Parallel, to 168th mile corner. Marked stone 7x6x4 -168-M and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 14x8x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -168M- respectively. No natural objects near.
Surface level (except bluff), covered with volcanic stone and sage brush and for 15 chs. 3d rate, pinion Pine timber.
Soil 3d. rate.

——West on 169th Mile——

Variation 13° 55' East.

10.00 Top of bluff, bears E N E.

30.00 Leave Pine timber, bears E N E.

57.00 Enter 3d. rate scrub pinion Pine timber, bears W N W.

68.00 Leave same and enter sage brush Prairie, bears W N W.

80.00 Offset from tangent to Parallel, to 169th mile corner Marked stone 10x6x4 -169M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x14x5, projecting 8 in. above mound, marked on the North, South,

CHAINS

West and East sides -C- -NM- -1868- -169M- respectively.
No natural objects near.
Surface rolling and stony.
Soil 3d. rate.
Sept. 10th. Measuring chain compared with standard and found correct.

——West on 170th Mile——

Variation 13° 50′ East.

64.50 Dry bed of creek, 10 lks. wide, stony bottom, course NE.

80.00 Offset from tangent to Parallel to 170th mile corner.
Marked stone 4x4x3 -170M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -170M- respectively.
No natural objects near.
Surface broken, covered with stone, and sage brush.
Soil 3d. rate.

——West on 171st Mile——

Variation 13° 50′ East.

56.50 Canon, 100 lks. wide, bears NE.

80.00 Offset from tangent to Parallel, to 171st mile corner.
Marked stone 6x6x4 -171M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -171M- respectively.
No natural objects near.
Surface rolling Prairie.
Soil 2nd rate.

——West on 172nd Mile.——

Variation 13° 50′ East.

52.00 Enter 2nd rate Pine timber, bears NE.

55.25 Road, bears E N E.

70.00 Leave timber, bears SE.

80.00 Offset from tangent to Parallel to 172nd mile corner, in trail which bears W N W.
Marked stone 5x5x4 -172M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x9x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -172M- respectively. No natural objects near.
Surface broken Prairie.
Soil 2nd rate.

——West on 173d Mile——

Variation 13° 50' East.

7.00 Enter scattering 2nd rate Pine timber, bears North.
32.00 Indian trail, bears SW.
38.79 Volcanic stone boulder 10x6x4 feet, about 2 feet south of line.
80.00 Offset from tangent to Parallel to 173d mile corner. Marked stone 7x6x4 -173M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 13x10x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -173M- respectively. No natural objects near.
Surface broken Prairie.
Soil 2nd rate.
Sept. 11th. Measuring chain compared with standard and found correct.

——West on 174th Mile——

Variation 13° 50' East.

30.00 Enter 2nd rate Pine timber, bears SW.
53.80 Indian trail, bears N N W.
54.00 Dry bed of creek, course N N W.
80.00 Offset from tangent to Parallel, to 174th mile corner. Marked stone 12x7x3 -174M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 15x12x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -174M- respectively. From which point a
Norway Pine tree, 18 in. dia., bears S 20 W, 78 lks. dist.
Yellow Pine tree, 12 in. dia., bears N 68 E, 31 lks. dist.
Surface broken, last half covered with 2nd rate Pine timber.
Soil 2nd rate.

CHAINS

——West on 175th Mile——

Variation 13° 31′ East.

49.50 Cañon, 200 lks. wide, bears N N E.

64.50 Cañon, 150 lks. wide, bears North.

80.00 Offset from tangent to Parallel to 175th mile corner, which is a pine tree, 8 in. dia. Bark removed, squared, etc., marked on the North, South, West and East sides -C- -NM- -1868- -175M- respectively.

From which point

A Pine tree, 24 in. dia., bears N 63 W., 41 lks. dist.

A pinion Pine tree, 10 in. dia., bears S 55 W., 31 lks. dist.

Surface broken, covered with 2nd rate Pine timber and an undergrowth of Pine and aspen brush

Soil 2nd rate

——West on 176th Mile——

Variation 13° 52′ East.

38.00 Leave Pine and Aspen timber and enter Prairie bears South and NW.

53.00 Enter 2nd rate Pine and Fir timber, bears NE and S S W.

80.00 Offset from tangent to Parallel, to 176th mile corner.

Marked stone 13x6x4 -176M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x16x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -176M- respectively.

From which point

A Pine tree, 24 in. dia., bears S 68 W., 72 lks. dist.

A Fir tree, 12 in. dia., bears N 75 E. 31 lks. dist.

Surface broken, covered with 2nd rate Pine and Fir timber.

Soil 2nd rate.

Sept. 12th. Measuring chain compared with standard and found correct.

——West on 177th Mile——

Variation 13° 52′ East.

49.00 Leave Pine, Aspen and Fir timber, bears W S W.

73.50 Enter Pine, Aspen and Fir timber, bears N and S.

80.00 Offset from tangent to Parallel, to 177th mile corner.

Marked stone 8x6x3 -177M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound,

CHAINS

2 feet square and 18 in. deep. Set sand stone 22x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -177M- respectively. From which point

A Fir tree, 20 in. dia., bears N 13 W., 28 lks. dist.

A Fir tree, 18 in. dia. bears S 5 E., 47 lks. dist.

Surface broken, covered with 2nd rate Pine and Aspen and Fir timber.

Soil 2nd rate.

——West on 178th Mile——

Variation 13° 52' East.

80.00 Offset from tangent to Parallel, to 178th mile corner. Marked stone 10x6x4 -178M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16x14x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -178M- respectively. No natural objects near.

Surface rolling, covered with fallen timber, destroyed about 6 years previous.

Soil 2nd rate.

——West on 179th Mile——

Variation 13° 52' East.

60.00 Top of bluff, descending along side of same.

80.00 Offset from tangent to Parallel to 179th mile corner. Marked stone 6x4x3 -179M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x20x16, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -179M- respectively. From which

A Pine tree, 14 in. dia., bears S 13 E., 34 lks. dist.

A Fir tree, 18 in. dia. bears N 3 E., 24 lks. dist.

Surface broken.

Soil 3d rate.

——West on 180th Mile——

Variation 12° East.

42.50 Enter valley, bears SW.

50.50 Creek, 20 lks wide, clear but shallow water, rapid current, stony bottom, course SE.

61.75 A large perpendicular volcanic stone, 175 feet high, about 50 feet at base, 3 chs dist

70.00 Large volcanic boulder, running to a peak, 75 feet high, and 20 feet at base

Variation 15° 30' East

78.00 Top of bluff, bears North and SE.

80.00 Offset from tangent to Parallel, to 180th mile corner

Marked stone 6x6x4 -180M- and deposited it, 3½ feet in earth Built conical mound of earth, 4 feet high, over same Dug pits 10 lks East and West from base of mound, 2 feet square and 18 in deep Set sand stone 24x8x6, projecting 8 in above mound, marked on the North, South, West and East sides C - -NM- -1868- -180M- respectfully

No natural objects near

Surface mountainous, covered with fallen timber and an undergrowth of small aspen timber

Soil 3d rate

—West on 181st Mile—

Variation 15° East

72.80 Top of perpendicular cliff, about 30 feet high, bears SE.

Variation (on mountain side) 12° East

80.00 Place for 181st mile corner, impossible to establish it

Surface broken, covered with fallen and an undergrowth of apsen timber

Soil 3d rate

Sept. 13th Measuring chain compared with standard and found correct

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—West on 182nd Mile—

Variation 15° East

1.00 To perpendicular cliff, 100 feet high To avoid cliff and perpendicular bluff, I offset South 4 chs, then West 20 chs, then offset back to line

20.00 Leave 2nd rate Pine, Fir and Aspen timber, bears NW.

40.50 Rio los Pinos, 60 lks wide, clear water, 12 in deep, rapid current, stony bottom, course S 8 E.

48.70 To astronomical monument No 6 which is represented by a sand stone, 5 feet long, 20 in wide and 10 in thick, set 2 feet in earth, marked on the North, South, West and East sides "Colorado", "New Mexico", "1868", "37 N.", respectfully. Built mound of cobble stones; 6 feet at base.

CHAINS

3 feet high and 4½ feet at top. Dug pits on the North, South, East and West sides.
Observations for Azimuth, at Astronomical Monument No. 6, on d Ursae Minoris, Dec 86° 36' 44" 1 R.A 18h 14m 49 10s. and 51 Cephei Dec 87° 14' 33" 5 Sept. 15th, 1868.
Chronometer fast at mean noon, on Sidar time 5h 49m 26s. with a losing rate of 16s per day.

	h	m	s
Chronometer time of observations of d Ursae Minoris, upper transit	12.	22.	00
Chro. time of observations, 51 Cephei	12.	44.	36
Chronometer interval		22.	36
Chronometer rate			0.27
Reduction to Sidereal time			3.73
Sidereal interval	22.	40.	00
Interval between upper and lower transit	22.	36.	5
			35

Computation

∴ 35 5 = 52" 5

Cos. d 86° 36' 44"	= 8.77300
Cos. d 87° 14' 33"	= 8.68366
Sec. ϕ 37	= 0.09165
Cosec. 6° 00' 0"	= 0.66682
1.74	0.24429

——West from Astronomical monument No. 6 on 182nd Mile——

Variation 15° East.

0.30 Leave valley, bears N 25 W.
11.80 Top of mountain ridge, bears. South
16.80 Leave fallen timber and enter prairie valley, course N N E.
17.80 Dry bed of creek, stony bottom, course N N E.
31.30 Offset from tangent to Parallel, to 182nd mile corner. Marked stone 10x6x3 -182M- and deposited 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.-NM- -1868- -182M- respectively. No natural objects near.

CHAINS

Surface mountainous, covered with fallen timber
Soil 3d rate

——West on 183d Mile——

Variation 13° 50′ East

39.00 Branch of the Rio los Pinos, 20 lks. wide, clear water, rapid current, stony bottom, general course NE.

52.50 Canon, 200 lks. wide, bears SE.

80.00 Offset from tangent to Parallel, to 183d mile corner.
Marked stone 8x4x3 -183M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18x10x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -183M- respectively.
No natural objects near.
Surface mountainous, covered with fallen timber and Aspen brush.
Soil 2nd rate.

——West on 184th Mile——

Variation 13° 50′ East.

71.00 Top of ridge, descending into canon, bears North.

79.70 Canon, 600 feet deep, bears N N E.

80.00 Offset from tangent to Parallel, to 184th mile corner.
Marked stone 12x7x3 -184M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x14x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -184M- respectively.
From which point
Valley of the Los Pinos, bears North, 30 chs. dist.
Surface mountainous.
Soil 3rd. rate.

——West on 185th Mile——

Variation 13° 50′ East.

0.30 Creek, 12 lks. wide, clear water, rapid current, rocky bottom, course N N E.

1.00 Leave canon, bears N N E, and ascend steep mountain side.

9.00 Top of bluff, bears N N E.

26.00 Small spring branch, a little south of line, course E N E and E S E.

CHAINS

80.00 Offset from tangent to Parallel, to 185th mile corner. Marked stone 10x8x3 -185M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16x10x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -185M- respectively. From which point
A Fir tree, 16 in. dia. bears S 58 W., 11 lks. dist.
A spruce tree, 8 in. dia bears N 58 E. 7 lks. dist.
Surface broken, covered with fallen timber, aspen brush and a few fir and spruce trees.
Soil 3d rate.
Sept. 16th. Measuring chain compared with standard and found correct.

——West on 186th Mile——

Variation 13° 55′ East.

3.00 Creek, 2 lks. wide, clear water, rapid current, course North.

9.40 Point of mountain, bears N 78 W.
Hay stack mound on snowy range, bears N 60¼ W.
High point on same, bears N 53 W.
Offset on same, bears N 47½ W.
High Point, bears N 32½ W.

61.50 Leave heavy fallen timber and enter Prairie valley, bears North.

74.50 Creek, 20 lks. wide, clear water, rapid current, rocky bottom, course N N E.

76.00 Indian trail, bears S S W.

80.00 Offset from tangent to Parallel, to 186th mile corner. Marked stone 12x6x7 -186M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16x12x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -186M- respectively. From which point
A Spruce tree, 18 in. dia., bears S 37 E., 27 lks. dist.
No other tree near.
Small Peak, bears N 70 W, about 20 chs. dist.
Small Peak, bears N 15 W., about 15 chs. dist.
High Point, bears N 30 E, about 1¾ miles dist.
High Point, bears N 58 E, about 2 miles dist.
High Point bears S 4 E, about 1 mile dist.

CHAINS

Point of mountain ridge bears N 54 W, 34' M dist.
Surface mountainous, 10 chs. from corner, the line runs along a side hill, that descends to the North, for 20 chs., covered with thick fallen Fir and Spruce timber.
Soil 2nd.

——West on 187th Mile——

Variation 13° 56' East.

17.00 Leave valley and enter fallen timber, bears NE.
48.00 Commence to descend into valley, bears SW and NE.
72.00 Leave fallen timber, bears S S W.
75.20 Creek, 8 lks. wide, clear water, rapid current, rocky bottom, course N N E.
80.00 Offset from tangent to Parallel, to 187th mile corner.
Marked stone 6x5x4 -187M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -187M- respectively.
No natural objects near.
Surface mountainous, covered with fallen timber.
Soil 2nd rate.

——West on 188th Mile——

Variation 13° 50' East.

8.00 Leave valley and enter fallen timber, bears South.
25.00 Top of mountain ridge, 600 feet above level of valley, bears S S W. Variation 15° East.
28.50 Mountain Peak bears N 75 W.
Offset of mountain ridge, bears N 70 W.
Hay stack Peak's, bears N 60 W—N 35 W.
Mountain ridge bears N 42 W.
Offset of mountain ridge—bears N 36 W-N 26 W-N 12 W.
Mountain ridge, bears N 70 W.
72.50 Creek, 6 lks. wide, clear water, rapid current, bears N N W.
80.00 Offset from tangent to Parallel to 188th mile corner.
Marked stone 8x6x3 -188M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -188M- respectively.
From which point a

CHAINS

Timbered hill, bears S 27 W-S 47 W.
Prairie Peak, bears S 65 W-S 72 W.
Volcanic stone boulder, 15x10x10 feet, on volcanic ledge, or Peak, bears N 67 W.
Volcanic ledge, on side hill, bears N 57 W.
West Point of mountain ridge, or ledge of rock, bears N 7 E.
A Spruce tree, 12 in. dia., bears N 8 W, 190 lks. dist.
No other tree near.
Surface mountainous.
Soil 2nd rate.
Sept. 17th. Measuring chain compared with standard and found correct.

——West on 189th Mile——

Variation 14° East.

5.50 Enter valley, bears E N E.
6.60 Creek, 10 lks. wide, clear water, rapid current, course E N E.
15.00 Leave valley, bears E N E.
17.80 Volcanic boulder, bears N 63 E, 16 lks. dist.
Rock on end of ridge, bears N 10 W., 12 chs. dist.
57.50 Top of mountain ridge, commence to descend side of mountain, 800 feet high, bears NE and S 80 W.
61.50 Perpendicular cliff of volcanic stone, 100 feet high, about 50 lks. South of line.
80.00 Place for 189th mile corner on side of bluff, impossible to establish corner.
No natural objects near.
Surface mountainous.
Soil 3d rate.

——West on 190th Mile——

Variation 14° East.

10.50 Enter Prairie valley, covered with a fine growth of grass, bears NW.
15.84 High volcanic Peaks bears S 42 E = S 20 E = S 7 E= S 15 W = N 63 W.
Point of mountain ridge, bears N 55 W.
Point of volcanic rock's bears N 45 W — N 33 W.
Slide of mountain top, having the appearance of white sand, bears N 28 W, about 2½ miles dist.
51.00 Creek, 5 lks. wide, clear wate[illegible]rapid current, course North.
51.25 Large volcanic boulder, 6 lks. South.

CHAINS

50.50 Creek, 8 lks. North, course North.

65.00 Top of bluff, descend into valley.

80.00 Offset from tangent to Parallel, to 190th mile corner. Marked stone 6x4x4 -190M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set sand stone 16x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -190M- respectively.
No natural objects near.
Surface mostly gently rolling and descending to the NW.
Soil 1st rate.
Sept. 18th. Measuring chain compared with standard and found correct.

——West on 191st Mile——

Variation 14° East.

11.50 East fork of the Rio Charmer, 150 lks. wide, clear water, rapid current, stony bottom, course W S W.

13.25 Leave Rio Charmer, course W S W, general course South. High banks.

31.38 Indian trail, bears N W.

53.25 Creek, 15 lks. wide, clear water, 2 in deep rapid current, stony bottom, course S.

60.00 Creek, 10 lks. wide, high banks, clear water, rapid current, course South.

80.00 Offset from tangent to Parallel, to 191st mile corner. Marked stone 8x6x3 -19M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -191M- respectively.
From which
A volcanic ledge of rock, bears N 28° W — N 38 E.
Volcanic rock on ridge, bears S 68 E — S 60 E.
Volcanic rock on ridge, bears S 45 E.
Mountain ridge having the appearance of white sand, bears S 10 E.
Valley to the South.
Surface broken.
Soil 2nd rate.

CHAINS

——West on 192nd Mile——

Variation 13° East.

9.30 Stone, 20x10x6 feet, formed of Volcanic gravel.

15.00 Mountain slide, bears South.

30.00 Leave same at Point of mountain.
Volcanic rock North, 200 feet dist.
Variation 15° East.

35.00 Enter 2nd rate Pine and Fir timber, bears North.

61.00 Creek, 10 lks. wide, clear water, 3 in. deep, rapid current, course SW.

80.00 Offset from tangent to Parallel to 192nd M temporary corner.
Surface mountainous.
Soil 2nd rate.

——West on 193d Mile——

Variation 13° East.

23.50 Leave Pine and Fir timber and enter valley, bears SW.

78.75 Creek, 15 lks. wide, muddy water, rapid current, stony bottom, course S S W.

80.00 Offset from tangent to Parallel, to 193d mile temporary corner.
Surface gently rolling.
Soil 2nd rate.
Sept. 18th. Measuring chain compared with standard and found correct.

——West on 194th Mile——

Variation 14° East.

16.50 Creek, 15 lks. wide, clear water, rapid current, stony bottom, course S S W.

23.00 Bed of Rio Charmer stony bottom course North, and

24.00 to water, 70 lks. wide, clear water, 24 in. deep, rapid current, stony bottom, course South, general course S S E. Banks on East side low, on West side 6 ft. high.

28.00 Leave valley and enter fallen timber, bears South.

48.50 Enter valley, bears SE.

50.00 Creek, 15 lks. wide clear water, 3 in. deep rapid current, stony bottom, course SE.
Enter 2nd rate Fir and Aspen timber, bears SE.

68.00 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course E S E.

80.00 Offset from tangent to Parallel, to 194th mile temporary corner.

CHAINS

Surface, after leaving valley, mountainous, covered with 2nd rate Pine and Fir timber.
Soil 2nd rate.

——West on 195th Mile——

Variation 14° East.

16.50 Enter dead timber, bears South.

35.00 Creek 6 lks. wide, clear water, rapid current, course E S E. and enter 2nd rate Fir and Aspen timber, bears E S E.

68.50 Creek 3 lks. wide, clear water, rapid current, course E N E and enter dead and fallen timber.

80.00 Offset from tangent to Parallel to 195th M temporary corner on top of mountain ridge.
Surface mountainous, covered with 1st rate Pine and Fir timber.
Soil 1st rate.

——West on 196th Mile——

Variation 13° 55′ East.

26.00 Enter swamp, covered with willow brush, and fallen timber, bears NW.

37.50 Leave swamp, bears SE and NW.

79.00 Enter 2nd rate Pine and Fir timber, bears N and S.

80.00 Offset from tangent to Parallel, to 196th mile temporary corner.
Surface broken, mostly covered with fallen timber.
Soil 2nd rate.

——West on 197th Mile——

Variation 13° 55′ East.

60.00 Leave 1st rate Pine and Fir timber and enter aspen brush, on side mountain, bearing to the South.

80.00 Place for 197th mile temporary corner, impossible to establish it.
Surface mountainous.
Soil 2nd rate.
Sept. 19th. Measuring chain compared with standard and found correct.

——West on 198th Mile——

Variation 14° East.

4.00 Foot of hill, to ravine, 50 lks. south.

11.00 Top of high bluff, bears North and South.

20.00 Enter 2nd rate Aspen timber, bears SE.

CHAINS

37.50 Enter valley, bears South.
40.00 Creek, 15 lks. wide, clear water, 4 in. deep, rapid current, stony bottom, course South, thick willow brush along banks.
42.00 Leave valley and enter Aspen brush, bears SE.
70.00 Enter 2nd rate fir timber, bears NE.
80.00 Offset from tangent to Parallel to 198th mi. corner temporary.
Surface mountainous, mostly covered with aspen timber.
Soil 2nd rate.

——West on 199th Mile——

Variation 14° East.
10.50 Creek, 15 lks. wide, clear water, rapid current, course S S W.
34.25 Top of mountain ridge.
Stone wall on west side bears North.
57.50 Leave 2nd rate Aspen timber, bears South.
80.00 Offset from tangent to Parallel, to 199th mile, temporary corner.
Surface mountainous.
Soil 2nd rate.

——West on 200th Mile——

Variation 14° East.
1.00 Small stream in bottom of canon, bears South.
80.00 Offset from tangent to Parallel to 200th mile temporary corner.
Surface broken.
Soil 2nd rate.

——West on 201st Mile——

Variation 14° East.
3.10 Creek, 10 lks. wide, clear water, 6 in. deep, rapid current, course SE.
40.00 Greatest depression of valley. A creek 5 lks. wide, clear but sluggish water, 10 in. deep, course SE.
Several small spring branches near.
59.20 Indian trail, bears SE.
80.00 Offset from tangent to Parallel to 201st mile temporary corner.
Surface rolling.
Soil 2nd rate.

CHAINS

—West on 202d Mile—

Variation 14 East

- 18.50 Creek, 8 lks wide, clear water, rapid current, stony bottom, course NE., willow brush on banks
- 22.50 Enter 2nd rate Pine Fir and Aspen timber, bears N and S.
- 44.00 Creek, 2 lks wide, clear water, course North
- 80.00 Offset from tangent to Parallel to 202nd mile temporary corner

Surface broken, covered with 1st rate Aspen and fir timber, and an undergrowth of Oak and Aspen brush

Soil 2nd rate

Sept. 20th. Measuring chain compared with standard and found correct

—West on 203d Mile—

Variation 14 East.

- 14.00 Summit of the divide of the Atlantic and Pacific waters, bears N N E.
- 68.50 Creek, 2 lks. wide, clear but shallow water, gentle current, course N N W.
- 80.00 Offset from tangent to Parallel to 203 mile temporary corner

Surface broken on side of mountain and descend to the North.

Soil 2d rate.

—West on 204th Mile—

Variation 14 East.

- 1.00 Pond of water, or sink hole, 150 lks. wide, muddy water, average depth, 10 in.
- 42.00 Leave 2nd rate Pine and Aspen timber, and enter Oak brush, bears North.
- 80.00 Offset from tangent to Parallel to 204th mile temporary corner.

Surface broken about ½, covered with Aspen and Fir timber, balance Oak brush

Soil 2nd rate.

—West on 205th Mile—

Variation 14 East.

- 60.00 Leave Oak brush and enter Prairie valley, bears W S W
- 79.75 Creek, 2 lks. wide, clear water, swift current, gravelly bottom, course W S W

CHAINS

80.00 Offset from tangent to Parallel to 205th mile temporary corner.
Surface broken.
Soil 2nd rate.

——West on 206th Mile——

Variation 14° East.

5.00 Leave valley, bears W S W.
60.00 Enter 2nd rate Pine timber, bears North and South.
79.00 Enter valley, bears S S W.
80.00 Offset from tangent to Parallel to 206th mile temporary corner.
Surface broken.
Soil 2nd rate.

——West on 207th Mile——

Variation 13° 59' East.

1.00 Leave valley and enter scattering 2nd rate Pine timber, bears S S W.
25.00 Leave timber and enter valley, bears NW.
29.50 Creek, 3 lks. wide, clear water, rapid current, course W S W.
37.50 Leave valley and enter scattering oak brush, bears W N W.
58.00 Leave scattering oak brush, and enter valley, bears W N W.
80.00 Offset from tangent to Parallel to 207th mile temporary corner.
Surface broken.
Soil 2nd rate.
Sept. 27th. Measuring chain compared with standard and found correct.

——West on 208th Mile——

Variation 14° East.

4.00 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course W N W.
4.40 Trail leading from Tierra Amarilla, N. M. to Pagosa Springs, Colo. bears W N W.
9.00 Leave valley, and enter 2nd rate scattering Pine timber and Oak brush, bears W N W.
37.00 Leave same, bears W N W. Enter valley bears NW.
Creek, 3 lks. wide, clear water, rapid current, course W N W.
46.00 Enter Oak brush, and scattering 2nd rate Pine timber, bears W N W.

CHAINS

55.00 Leave scattering Fire timber, and enter Oak brush, bears W N W.

80.00 Offset from tangent to Parallel to 208th mile temporary corner.
Surface broken.
Soil 2nd rate.

——West on 209th Mile——

Variation 14° East.

77.00 Top of mountain ridge, bears N and S.

80.00 Offset from tangent to Parallel, to 209th mile temporary corner, in thick Aspen and Oak brush.
Soil 2nd rate.
Surface mountainous, covered with Oak, Aspen and willow brush.

——West on 210th Mile——

Variation 14° East.

6.00 A deep canon. Set flag on opposite bank of canon and thence North 8 chs, flag bears S 71° 34′ W. Therefore we have the statement

Sin. 18° 26′	=	9.499063
Sin. 71° 34′	=	9.977125
Log. 8 chs.	=	0.903090
24 chs.		1.380232

30.00 Leave canon, 600 feet deep, and nearly perpendicular sides, bears S S W.

38.00 Canon, bears South, 500 feet deep. I set flag on opposite bluff, thence North 10 chs. flag S 69 W, therefore we have the statement

Sin 21°	=	9.554329
Sin. 69°	=	9.970154
Log. 10 chs	=	1.000000
chs. dist. 26.05 lks.		1.415823

64.05 Leave canon, almost perpendicular sides, of sand stone, bears South.

70.00 Canon, 500 feet deep, nearly perpendicular sides. Set flag on opposite bank, thence North 6 chs. flag bears S 74 W., 8 chs., flag bears S 69° 05′ W. Therefore we have the statement

CHAINS.

Sin. 20° 55′	= 9.552080	Sin. 16°	= 9.440338
Sin. 69°05′	= 9.970394	Sin. 74°	= 9.982842
Log. 8 chs.	= 0.903090	Log. 6 chs.	= 0.778151
chs.		chs.	
20.93 lks.	1.320840	20.94 lks.	1.320655

Mean 20.93½ lks.

80.00 Place for 210th mile corner in canon, impossible to establish corner.

Surface mountainous, covered with thick Oak and Aspen Brush.

Soil 2nd rate.

Sept. 28th. Measuring chain compared with standard and found correct.

——West on 211th Mile——

Variation 14° East.

10.93 Leave canon, bears South, and enter 2nd rate Pine timber.

80.00 Offset from tangent to Parallel to 211th mile temporary corner.

Surface mountainous.

Soil 3d rate.

——West on 212th Mile——

Variation 14° East.

70.00 Canon, 1000 feet deep, bears NW. nearly perpendicular sides, of sand stone.*

Sin. 14°22′	= 9.394673	Sin. 19°46′	= 9.528458
Sin. 75°38′	= 9.986202	Sin. 70°16′	= 9.973716
Log. 10 chs.	= 1.000000	Log. 14 chs.	= 1.146128
39.04 chs.	1.591539	39.03 chs.	1.591386

Mean 39.03½ lks.

A stream of water, about 20 ks. wide, runs in canon, clear water, rapid current, stony bottom, course NW.

80.00 Place for 212th mile corner on side of bluff, impossible to establish corner.

*Set flag on west side of canon, thence North 10 chs. flag bears S 75° 38 W. 14 chs. S. 70° 16 W.

——East on 206th Mile——

Surface mountainous.

Soil 3d rate.

CHAINS

——West on 213th Mile——

Variation 14° East.

20.04 Leave canon, 1000 feet deep. Bluffs on each side, nearly perpendicular, and composed of sand stone. A stream of clear rapid water in canon, course NW.

80.00 Offset from tangent to Parallel, to 213th mile temporary corner.

Surface mountainous.

Soil 3d rate.

——West on 214th Mile——

Variation 14° East.

31.00 Enter valley, bears N N W.

53.00 Creek, 10 lks. wide, clear water, 4 in. deep, rapid current, gravelly bottom, course N N W.

55.50 Trail, bears N N W.

55.75 Set temporary witness corner, a sand stone 24 x 8 x 8-

70.00 Enter wet bottom, covered with willow brush, bears North.

80.00 Place for 214th mile corner in wet bottom subject to overflow to the depth of 7 feet. Impossible to establish corner.

Surface broken.

Soil 2nd rate.

——West on 215th Mile——

Variation 14° East.

4.00 Rio Navajoe, clear water, 18 in. deep, swift current, stony bottom, low banks, course S W.

8.00 Over Rio Navajoe, course S W.

20.00 Leave wet bottom, bears South.

24.75 Indian trail, bears S S W.

25.30 Astronomical monument No. 7. Offset from tangent to Parallel to a point 75 lks. South of astronomical monument No. 7 on Parallel. This monument is identified by a Pine charred post, 14 feet long, 12 in. square, set in a monument of stone, 5 feet high. Post marked on the North, South, West and East sides—"Colorado" "New Mexico" "1868" "37NL" respectufllly

Sept. 20th. Measuring chain compared with standard and found correct.

I corrected the line back East to 191st mile corner, a distance of 23 315/1000 miles making a correction of 3 22/100 lks. per mile.

CHAINS

——East on 214th Mile——

Variation 13° East.

80.00 Place for 214th mile corner in wet bottom, subject to overflow, to the depth of 7 feet, impossible to establish corner.

24.25 Set witness corner, built conical mound of stone. Set sand stone 24 x 8 x 8, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- which is 73 lks. North of temporary witness corner.

——East on 213th Mile——

Variation 13° 59′ East.

80.00 Moved temporary corner 70 68/100 lks. North and set true corner. Marked stone 5 x 4 x 3 -213M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -213M- respectively.

No natural objects near.

——East on 212th Mile——

Variation 13 59′ East.

80.00 Place for 212th mile corner. Impossible to establish it.

No natural objects near.

——East on 211th Mile——

Variation 13° 59′ East.

80.00 Moved temporary corner 64 24/100 lks. North and set true corner. Marked stone 5 x 3 x 3 -211M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long, 6 in. square, beveled at top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -211M- respectively.

No natural objects near.

——East on 210th Mile——

Variation 13° 59′ East.

80.00 Place for 210th mile corner in canon but impossible to establish it.

No natural objects near.

CHAINS

——East on 209th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 57 80/100 lks. North and set true corner in thick Aspen and Oak brush. Marked stone 6 x 6 x 3 -209M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -209M- respectively. No natural objects near.

——East on 208th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 54 58/100 lks. North and set true corner. Marked stone 10 x 6 x 3 -208M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Oak post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -208M- respectively.

From which

Mountain Peak, bears N 26 W, about 30 M dist.
Point of mountain ridge, bears N 4 E.
Mountain Peak bears N 28 E - N 70 E - S 45 W.

——East on 207th Mile——

Variation 12° 58' East.

80.00 Moved temporary corner 51 36/100 lks. North and set true corner. Marked stone 5 x 5 x 4 -207M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at the top, three feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -207M- respectively.

From which point a

Timbered Peak, bears S 55 W.
Perpendicular ledge of rock, bears S 25 W. 30 chs. dist.

CHAINS

——East on 206th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 48 14/100 lks. North and set true corner. Marked stone 6 x 5 x 3 -206M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.
Charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -206M- respectively.

From which point
A Pine tree, 30 in. dia. bears N 15 E. 250 lks. dist.
A Pine tree, 30 in. dia. bears S 72 W. 237 lks. dist.

——East on 205th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 44 92/100 lks. North and set true corner. Marked stone 6 x 4 x 3 -205M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred oak post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -205M- respectively.

From which point a
High point, bears N 55 E. 5 chs. dist.
High Point, bears North, 20 chs. dist.
High Point, bears South 25 chs. dist.

——East on 204th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 41 70/100 lks. North and set true corner. Marked stone 3 x 3 x 2 -204M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in deep. Set sand stone 30 x 16 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -204M- respectively.

From which point
Timbered Peak, bears South, 2 miles dist.
Point of perpendicular rock, bears S 58 W.
Conical Peak, bears N 3 W. 20 chs. dist.

CHAINS

——East on 203d Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 38.48/100 lks. North and set true corner. Marked stone 8 x 6 x 3 -203M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -203M- respectively.

From which point

An aspen tree, 12 in. dia. bears N 5 W., 57 lks. dist.
An aspen tree, 8 in. dia. bears S 5 W., 25 lks. dist.

——East on 202nd Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 35.26/100 lks. North and set true corner. Marked stone 5 x 5 x 4 -202M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Aspen post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -202M- respectively.

From which

An aspen tree, 16 in. dia. bears N 5 W 17 lks. dist.
An aspen tree, 12 in. dia. bears S 7 E. 25 lks. dist.

——East on 201st Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 32.04/100 lks. North and set true corner. Marked stone 10 x 6 x 6 -201M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -201M- respectively.

From which point a

Conical point, on East of Sierra Navajoe, bears N 40 E.
Highest point on North of Sierra Navajoe, bears N 24 W.

CHAINS

Most Northern point of Southern ridge of Sierra Navajoe bears S 66 E.

——East on 200th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 28 82/100 lks. North and set true corner. Marked stone 12 x 5 x 4 -200M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -200M- respectively.

No natural objects near.

——East on 199th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 25 60/100 lks. North and set true corner. Marked stone 4 x 4 x 3 -199M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Aspen post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -199M- respectively.

From which point

An aspen tree, 10 in. dia., bears S 55 W. 27 lks. dist.
An aspen tree, 8 in. dia., bears S 45 W. 23 lks. dist.

——East on 198th Mile——

Variation 13° 59' East.

80.00 Moved temporary corner 22 38/100 lks. North and set true corner. Marked stone 6 x 5 x 5 -198M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -198M- respectively.

From which

A Fir tree, 12 in. dia. bears S 40 E. 9 lks. dist.

CHAINS

A Fir tree, 10 in. dia. bears N 15 W. 6 lks. dist.

——East on 197th Mile——

Variation 13° 54′ East.

80.00 Place for 197th mile corner, on mountain side, impossible to establish it.

——East on 196th Mile——

Variation 13° 54′ East.

80.00 Moved temporary corner 15 94/100 lks. North and set true corner. Marked stone 4 x 4 x 4 -196M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.
Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -196M- respectively.

From which point

A Fir tree, 10 in. dia. bears S 25 W. 15 lks. dist.
A Fir tree, 15 in. dia., bears N 25 E. 23 lks. dist.
Summit of mountain ridge, bears South.

——East on 195th Mile——

Variation 13° 59′ East.

80.00 Moved temporary corner 12 72/100 lks. North, and set true corner, on top of mountain ridge. Marked stone 6 x 5 x 4 -195M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -195M- respectively.
No natural objects near.

——East on 194th Mile——

Variation 13° 59′ East.

80.00 Moved temporary corner 9 50/100 lks. North and set true corner. Marked stone 4 x 3 x 3 -194M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3

CHAINS

feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -194M- respectively.

From which point
A Fir tree, 16 in. dia. bears N. 20 W, 46 lks. dist.
A Fir tree, 20 in. dia. bears S 38 E, 28 lks. dist.

——East on 193d Mile——

Variation 12° 59' East.

80.00 Moved temporary corner 6 28/100 lks. North and set true corner. Marked stone 8 x 5 x 4 -193M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir Post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -193M- respectively.

From which point a
High Peak, bears N 60 W.
Timbered Peak, bears North.
Mountain slide, bears N 21 E., ¼ mile dist.
Volcanic ledge, bears N 32 E. 1 mile dist.
Point of mountain ridge, bears N. 52 E.
Mountain Peak, bears N 75 E.
Mountain Ridge, bears S 30 E.
Mountain Peak, East of valley, bears S 3 W.
Valley, bears S 10 W.
Point of Ridge, bears S 18 W.

——East on 192nd Mile——

Variation 12° 59' East.

80.00 Moved temporary corner 3 06/100 lks. North and set true corner in dead timber. Marked stone 10 x 6 x 3 -192M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at to 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -192M- respectively.
No natural objects near.

CHAINS

Observations for asimuth at Astronomical Monument No. 7, on d Ursae Minoris Dec 86° 36′ 44″.3 RA 18h 14m 44s and 51 Cephei Dec. 87° 14′.02″.5 RA 6h 37m 56s.5 Sept. 30th, 1868. Chronometer fast at mean noon, on Solar time 5m 46s.21 with a loosing rate of 22s per day.

	h	m	s
Lower transit of d Ursae Minoris Oct. 1st AM—Chronometer time	11.	18.	43.
Upper transit of 51 Cephei	11.	41.	58.5
Chronometer intervals		23.	15.5
Chronometer rate			0.3
Reduction, to Sidereal time			3.8
Sidereal interval		23.	19.6
Interval between upper and lower transit		23.	12.5
			7.1

Computation

$\Delta 7^s.1 = 106''.5$	Log. = 2.02735	
Cos. d 86° 36′ 44″	= 8.77300	Magnetic
Cos. d 87° 14′ 25″	= 8.68366	Variation
Sec. ϕ 37°	= 0.09765	14° East.
Cosec. 6° 09′ 13″	= 0.06982	
East of true asimuth 3s.56	0.55148	

——West from Astronomical Monument No. 7 on 215th Mile——

Variation 14° East.

1.70 Foot of ridge, bears South.

9.70 Top of ridge, bears S S W.

17.70 Foot of Ridge and enter valley, bears South.

19.70 Creek, 20 lks. wide, clear water, rapid current, course South. Willow brush along banks and beaver dams every few chains.

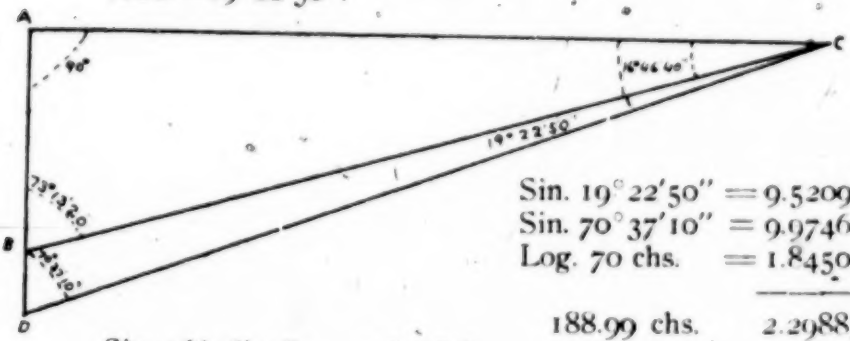
26.20 Indian trail, bears South.

32.70 Leave valley and enter 2nd rate Pine timber, bears S S E.

CHAINS

54.70 Offset from tangent to Parallel to 215th mile temporary corner.

Surface mostly level Prairie. Soil 2nd rate. It being impossible to measure the line up the mountain ridge, West of the 115th mile corner, I set flag on ridge, and formed the triangles ABC - ADC from a point 35 chs. West of 214th mile corner, measured the angles A=90° : B=73° 13'.20" ; 4D=70°37'10", therefore the angles ACB=16.46.40 ACD=19°22'50".



Sin. 19°22'50" = 9.520930
Sin. 70°37'10" = 9.974666
Log. 70 chs. = 1.845098

188.99 chs. 2.298834

Sin. 16°46'40" = 9.460387
Sin. 73°13'20" = 9.981108
Log. 60 chs. = 1.778151

199.01 chs. 2.298872

Large 198.99)
Small 199.01) chs. chs.
Mean of computations 199.00

Therefore at 74 chs. on 117th mile, top of Myer ridge, nearly level on top.

Variation 14° East.

——West on 217th Mile——

Variation 14° East.

80.00 Offset from tangent to Parallel, to 217th mile, temporary corner.

Surface broken.

Oct. 2nd. Measuring chain compared with standard and found correct.

——West on 218th Mile——

Variation 13° 56' East.

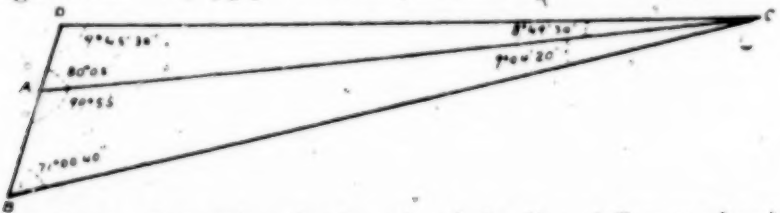
14.30 High perpendicular cliff. The country West of this point is cut up by deep canons and high ridges, making it impossible to measure line with chain and this ridge being the only point that I could get a base that could be measured with sufficient accuracy for computing the distance, I found the triangle ABC - ADC and BCD, the point C is a lone

CHAINS

Pine tree, standing near the West end of a high mountain ridge, and cannot be mistaken for any other. The above named

M.

tree is 5 North of the line, or N 89 55 W. I run N 10 E 147 chs. 50 lks. formed the the triangle ABC measured angles A=90°55'. B=71°00'40". I formed the triangle ADC, the measured angles A=80°05', D=94°53'30", hence we have the angles BACB=9°04'20", ACD=5°49'30" and angle DCB=14°53'50", AD=90 chs. and BD=23.75 chs.



In order to determine the length of the line AC= we have the following statements:

Sin. 9°04'20"=	9.197775	In triangle ADC we have	
Sin. 71°00'40"=	9.975699		
Log. 147.50 chs=	2.168792	Sin. 5°49'30"=	9.0064249
	2.946716	Sin. 94°05'30"=	9.9988916
		Log. 90 chs.	1.9542425
			2.9467092

In triangle DBC

Angle C=14°53'50"=	9.4100783
Angle B=71°00'40"=	9.9756991
Side BD. 237.5 chs.=	2.3756636
	2.9412844

SIDE DC 873.54 chs.
Point D)
West of)
Point A) 15.63 chs.

889.17

Difference between measurement on line AC and D C 4.65

884.52

-MEAN-

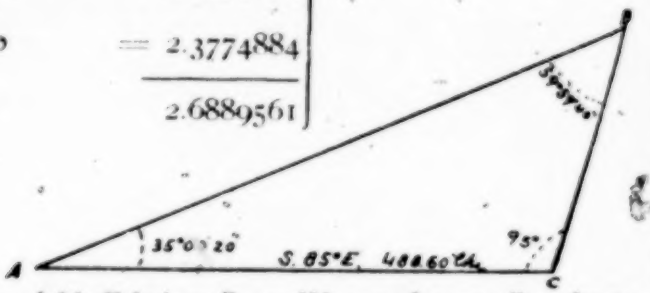
1st comp'n	884.54
2nd do.	884.52
3rd do.	884.52
	884.52.6

CHAINS

M chs. lks.

Point C or tree on bluff is 11. 04. 52 6/10 West of point A, in triangle, or 18 chs. 82 6/10 lks. on 129th mile. Tangent 147 lks. South of line, Parallel is 28 lks. North of tree, or point C. The North point of ridge is 50 lks. North. The South point 50 lks. South of point D and B in triangle. Perpendicular bluffs on each side. In order to determine the point where the boundary line crosses the Rio Navajoe, from point on the bluff, on the West side of the stream I took the following bearings of the North and South points of the mountain ridge, where the triangulation was made from a point on bluff on the South point of the ridge, bearing S 85° E. North point bears N 69° 59′ 40″ E. Therefore I have the triangle ABC, with the angles A=25°00′20″, B=59°59′40″, and C=95°.

Sin. 25°00′20″	=	9.6260386
Sin. 59°59′40″	=	9.9375063
chs.		
Log. 238.50	=	2.3774884
488.60 chs.		2.6889561



South point of bluff being S 10 W. 90 chs. 50 lks. from point 14. chs. 30 lks. West of 217th mile corner, is 89 chs. 12 lks. South of line, and 30 chs. 02 lks. further west than 217th mile corner, S 85 E, 488 chs. 60 lks. + 42 Lat 61 chs. 468 DEP. 75 chs. + 30.02=516.77 lks. West of the 217th mile corner or 36 chs. 77 lks. further West than the place for the 223d mile corner, 89 chs. 12 lks. - 42 chs. 61 lks. = 46 chs. 51 lks. - 28 lks. for distance North of the Parallel = 46.23 lks. South of Parallel, thence N 2 E 46.54 chs. to a point on Parallel 35 chs. 14 lks. West of 223d mile. Bluff of the Rio Navajoe, 100 lks. East thence West on 224 mile.

Variation 13° 56′ East.

35.70 Indian trail, bears North.

35.80 Set a temporary witness stone monument.

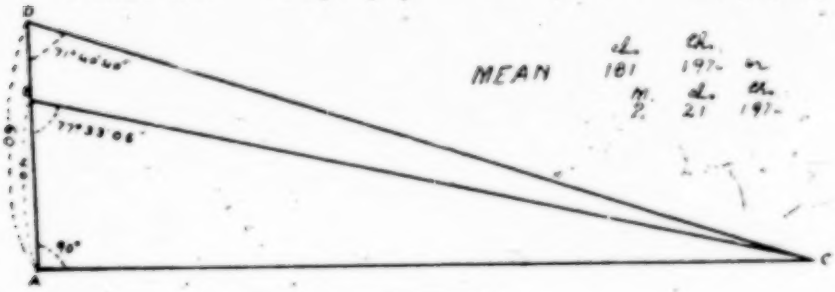
39.50 Rio Navajoe, 100 lks. wide, 18 in. deep, stony bottom, rapid current, course NW.

41.00 Foot of nearly perpendicular cliff, 4 feet high, bears NW.

CHAINS

It being impossible to measure further with chain on line on account of the number of deep canons, and abrupt ridges. Tree on line on bluff, 19 lks. North of Parallel. I here built temporary mound of earth and stone. I found it impossible to measure line with chain from this point to valley, on account of the precipitous character of the ridges and deep canons. I, from a point on ridge, on tagent, caused a flag to be set on a small elevation, near the valley, and at that point, I formed the triangle ABC and ADC, measured angles A=90 B. 77.33.05, D=71.40.40, hence the angle ACB=12.26.55; ADC 18.19.20, measured sides AB=40, AD=60, hence we have

Sin. 12°26'55"	= 9.333576	Sin. 18°19'20"	= 9.497428
Sin. 77°33'	= 9.989672	Sin. 71°40'40"	= 9.977405
Log. 40 chs.	= 1.602060	Log. 60 chs.	= 1.778151
181.20 chs.	2.258156	181.19 chs.	2.258128



MEAN

——West on 231st Mile——

Variation 14° East.

43.00 Enter San Juan valley, bears S W.

78.00 Bend in Rio San Juan, clear water, rapid current, stony bottom, course SW.

Offset from tangent to Parallel and set temporary witness corner. Offset South 5 chs. in order to measure line, thence West 20 chs. offset back to line, on left bank of river.

Surface except valley, mountainous, cut up by deep canons, covered with scrub Pine timber.

Soil 3d rate.

——West on 232nd Mile——

Variation 14° East.

20.00 Leave bend in Rio San Juan, clear water, rapid current, stony bottom, course, W S W

CHAINS

63.00 Bend of Rio San Juan, average depth about 2 feet, course W S W.
71.50 Sandbar, in river.
73.50 Leave sand bar and enter water, course W N W.
75.00 Sand bar, bears W N W.
80.00 Place for temporary 232nd mile corner on sand bar, and impractical establish it. Subject to inundation, to the depth of 10 feet. Bottom also subject to inundation, to the depth of 6 feet.

Surface on South side of river mountainous, on the North side, valley is about ¼ of a mile wide.
Soil in valley 2nd rate.

——West on 233d Mile——

Variation 14° East.

31.75 Leave sand bar, and bed of Rio San Juan, course W N W.
79.00 Canon, bears NE.
79.50 Dry bed of Creek, 5 lks. wide, stony bottom, course NE.
80.00 Offset from tangent to Parallel to 223d mile temporary corner, in canon.

Surface broken.
Soil 3d rate.

——West on 234th Mile——

Variation 13° East.

60.00 Top of bluff, descending into canon, bears N N E.
72.00 Dry bed of creek, stony bottom, course N N E.
80.00 Place for 234th mile corner, on side of bluff, impossible to establish it.

Surface mountainous, covered with scrub Pine timber.
Soil 3d rate.

——West on 235th Mile——

Variation 14° East.

12.00 Top of bluff, bears North.
21.00 Peak on mountain ridge, bears N 37¾ W.
28.50 Dry bed of creek, sandy bottom, course North.
80.00 Offset from tangent to Parallel to 235th mile temporary corner.

Surface mountainous and stony, covered with scattering scrub Pine timber.
Soil 3d rate.

CHAINS

Oct. 7th. Measuring chain compared with standard and found correct.

It being impossible to measure on line with chain on account of the broken condition of the surface, I offset North, forming a right angle with tangent, 68 chs. thence West on Parallel with tangent 4 M 40 chs, offset South at right angles to tangent, 68 chs. to tangent.
Surface on offset broken, also along side of mountain, covered with scrub, Pine and Cedar timber.
Soil 3d rate.

——West on 240th Mile——

Variation 14° East.

61.00 Leave mountains and enter San Juan Valley bears S W.
A gradual descent from bluff to river.

80.00 Offset from tangent to Parallel, to 240th mile, temporary corner.
Surface except bottom, mountainous, covered with scrub cedar and pine timber and Oak brush.
Soil 2nd rate.

——West on 241st Mile——

Variation 14° East.

68.00 Enter scattering 2nd rate cottonwood timber, bears S W.
74.00 Rio San Juan, course S S W.
78.50 Leave Rio San Juan, clear water, about 30 in. deep, rapid current, stony bottom, low banks, course S S W.
80.00 Place for 241st mile corner, on side of bluff, impossible to establish it.
Surface on east side of river, a gradual descent to it.
Soil 2nd rate.

——West on 242nd Mile——

Variation 14° East.

4.00 Top of bluff bears S W.
9.00 Indian trail, bears S S W.
10.00 Descend into valley, bears South.
21.70 Offset from tangent to Parallel, to a point 410 lks. South of Astronomical Monument No. 8 which is represented by a granite stone 6 feet long x 10 x 11 in. marked on the North, South, West and East sides "Colorado" "New Mexico" "1868" "37NL" respectively.
Dug pits 2 feet square and 18 in. deep on the North, South,

CHAINS

West and East sides.

I therefore make a correction of 15 8/10 lks. per mile North. Thence

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——East on 242nd Mile——

Variation 13° 53′ East.

21.70 Place for 241st mile corner on side of bluff, impossible to establish it.

——East on 241st Mile——

Variation 13° 53′ East.

80.00 Moved temporary corner 3.90 2/10 chs. North and set true corner to 240th mile. Marked stone 5 x 5 x 4 -240M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 16 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -240M- respectively.

No natural objects near.

——East on 240th Mile——

Variation 13° 53′ East.

Impossible to establish the 239th - 238 - 237 - and 236 mile corners.

Offset from 235th mile temporary corner 3.14 8/10 chs. North, and set true corner. Set a sand stone 5 x 4 x 2 marked on the North, South, West and East sides -C- -NM- -1868- -235M- respectfully. Dug pits 10 lks. East and West from stone, 2 feet square and 18 in. deep.

From which point

A sand stone 7 x 6 x 3 feet bears S 45 E, 9 lks. dist.

——East on 234th Mile——

Variation 12° 53′ East.

80.00 Moved temporary corner 2.99 chs. North and set true corner to 233d mile. Marked stone 4 x 3 x 2 —and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 8 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -234M- respectively.

CHAINS

No natural objects near.

——East on 233d Mile——

Variation 12° 53′ East.

80.00 Place for 232nd mile corner on sand bar in Rio San Juan, and impossible to establish it.

From which point

Point of ridge bears N 20 W, 3 miles dist.
Point of ridge, bears S 5 E, 40 chs. dist.

——East on 232nd Mile——

Variation 13° 53′ East.

80.00 Place for corner in river.

82.00 Moved temporary witness corner 252 9/10 lks. North on 232nd mile, and set true corner. Built conical mound of earth and stone, 4 feet high. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 16 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868-. No natural objects near.

——East on 231st Mile——

Variation 13° 53 E.

Impossible to establish the 230 - 229 - 228 - 227 - 226 - and 225th mile corners.

——East on 229th Mile——

Variation 13° 49′ East.

80.00 Moved temporary witness corner on 224th mile, 2 chs. 19 lks. North, and set true witness corner. Built conical mound of earth, 4 feet high. Set sand stone 30 x 12 x 4 marked on the North -C- South -NM- East -37NL- West -1868-.

The above corner is on a high ridge, about 1½ miles South of Rio San Juan

From which point

A Pine tree, 20 in. dia. bears South 2.11 lks.
No other tree near.

——From witness corner 35.80 lks. West on 224th Mile——

Variation 13° 59′ East.

Moved temporary witness corner 1.29 lks. North, and set true witness corner. Built conical mound of earth, 4 feet

CHAINS

high. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 20 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -37NL-.

——East on 224th Mile——

Variation 13° 49' East.

Impossible to establish 223 - 222 - 221 and 220 mile corners.

Moved 217th mile temporary corner, 40 9/10 lks. North and set true corner. Marked stone 5 x 4 x 4 -217M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 23 x 10 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -217M- respectively.

No natural objects near.

Impossible to establish 216th mile corner.

Moved 215th mile temporary corner 10 5/10 lks. North, and set true corner. Marked stone 6 x 5 x 3 -215M- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -215M-.

From which point

A Pine tree, 20 in. dia., bears N 15 W., 40 lks. dist.

A Pine tree, 16 in. dia. bears S 10 E, 25 lks. dist.

Observations for Asimuth, Oct. 10th A.M. at Astronomical Monument No. 9 on d Ursae Minoris RA 18. 14. 32.2 Dec. 86° 36' 44" and 51 Cephei RA 6. 37. 46 Dec. 87° 14' 03".5. Chronometer fast at mean noon, on Solar time 5. 46. 21, with a loosing rate of 2.0 per day.

h m s

h m s

h m s

s

CHAINS

	h	m	s
Chro'n time of Obs'n of d Ursae Minoris, AM lower transit	10.	44.	25.
Chro'n time of Obs. of 51 Cephei, upper transit	10.	07.	40
Chronometer interval		23.	15
Chronometer rate			0.3
Reduction to Sidereal time			3.8
		23.	19.1
		23.	07
			12

$\Delta 12 = 18''.0$ Log

Cos.d 86°36'44"	=	8.77300	Va. 14° East.
Cos.d 87°14'03"	=	8.68366	
Sec. 37°	=	0.09765	
Cosec. 6°09'	=	0.96982	
Error 6"0		0.77940	

——West from Astronomical Monument No. 8
21.70 lks. West on 242nd Mile——

Variation 14° East.

426.00 Dry bed of Creek, 10 lks. wide, high banks, stony bottom, Course S°S E.

31.00 Top of Hill, or ridge, bears S°S E, and enter scrub pinion Pine and Cedar timber, bears S S E.

58.00 Leave timber, and enter sage brush Prairie bears South.

80.00 Offset from tangent to Parallel, to 242nd mile corner. Marked stone 5 x 5 x 4 -242M- and deposited it 3½ feet in earth. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -242M- respectively.

No natural objects near.

Surface level, except 1st 30 chs.

Soil 2nd rate.

CHAINS

——West on 243d Mile——

Variation 14° East.

74.50 Dry bed of Creek, 50 lks. wide, high banks, gravelly bottom, course South.

80.00 Offset from tangent to Parallel to 243d mile corner. Marked stone 4 x 4 3 -243M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred cedar post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -243M- respectively.

From which point a
Conical Peak, bears N 7 E.
High Point, on mountain ridge bears N 58 E.
A large tree, on conical peak, bears S 45 E.
Point of ridge, bears South.
Point of Ridge, bears S 40 W, 1½ miles dist.
Surface gently rolling, covered with sage brush.
Soil 2nd rate, gravelly.

——West on 244th Mile——

Variation 14° 02' East.

36.50 Dry bed of Creek, high banks, sand and gravelly bottom, course S S E.

67.25 Indian trail, bears NW.

80.00 Offset from tangent to Parallel, to 244th mile corner. Marked stone 10 x 4 x 4 -244M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred cedar post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -244M- respectively.

From which point, a
Point of Ridge, bears N 79 W.
Point of ridge, bears N 12 W., 10 miles dist.
Conical Peak, bears N 13 E.
Mountain Peak, bears N 36 E, 35 miles dist.
Mountain Peak, bears N 82 E, 45 miles dist.
Point of mountain ridge, bears S 54 E, 12 M dist.
Surface gently rolling, covered with sage brush.

CHAINS

Soil 2nd rate.

——West on 245th Mile——

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel to 245th mile corner. Marked stone 8 x 6 x 3 -245M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- South -245M-.

No natural objects near.

Surface gently rolling.

Soil 2nd rate.

——West on 246th Mile——

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel, to 246th mile corner. Marked stone 6 x 4 x 3 -246M- and deposited it 3½ feet in ground. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -246M-.

No natural objects near.

Surface gently rolling.

Soil 2nd rate.

——West on 247th Mile——

Variation 14° 03′ East.

36.50 Enter scattering scrub Pine and Cedar timber, bears South.

58.00 Top of ridge, 400 feet above valley, bears NW.

80.00 Offset from tangent to Parallel, to 247th mile corner. Marked stone 6 x 4 x 3 -247M and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40 x 10 x 4, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -247M-.

No natural objects near.

Surface 1st half, level 2nd half broken.

Soil 2nd rate.

CHAINS

——West on 248th Mile——

Variation 14° 03′ East.

14.00 Descend into valley, 150 feet deep.

47.00 Top of bluff, on west side of valley, bears NE.

74.00 Leave scrub Pine and cedar timber, bears North.

80.00 Offset from tangent to Parallel, to 248th mile corner. Marked stone 6 x 5 x 3 -248M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -248M-.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 249th Mile——

Variation 14° 03′ East.

7.00 Enter scattering pinion, Pine and Cedar timber, bears NE and SW.

80.00 Offset from tangent to Parallel, to 249th mile corner. Marked stone 5 x 5 x 3 -249M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 12 projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East 249M-.
No natural objects near.
Surface mountainous, covered with scrub Pipe timber.
Soil 3d rate.
Oct. 10th. Measuring chain compared with standard and found correct.

——West on 250th Mile——

Variation 14° 03′ East.

8.00 Perpendicular bluff, bears SW.

23.50 Point of perpendicular sand stone bluff, about 1200 feet above valley, and 40 feet perpendicular.

58.00 Leave scattering pinion Pine and Cedar timber and enter valley of the los Pinos, bear North.

80.00 Offset from tangent to Parallel to 250th mile corner. Marked stone 5 x 5 x 4 -250M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone, 30 x 8 x 6, projecting 8 in. above mound, marked on the North -C- South -XM- West -1868- East 250M-.

From which point

Point of bluff, bears N 17 W.
Conical Peak bears S 22 W.
Saddle Peak, bears N 80 W.
Surface broken except valley, which is broken.
Soil in valley 2nd rate.
Balance 3d rate.

——West on 251st Mile——

Variation 14° 03′ East.

30.50 Dry bed of Creek, 40 lks wide, rocky bottom, course S S E.
59.00 Enter valley, bears S S E.
75.80 Rio los Pinos 100 lks. wide, clear water, about 18 in. deep, rapit current, stony bottom; banks on East side high on West side-low and stony, Course S S E.
79.40 Top of bluff on west side of river, bears S S E.
80.00 Offset from tangent to Parallel, to 251st mile corner. Marked a stone 8 x 6 x 4 -251M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 38 x 12 x 5, projecting 8 in. above mound, marked on the North -C- South -XM- West -1868- East -251M-.

From which point a

Conical mound, bears N 72 W.
Snowy peak, bears N 3 W.
Conical peak, on mountain, bears N 7 E. 30 M dist.
Conical peak, on mountain bears N 17 E.
Conical peak, bears S 32 E. 1 mile dist.
Surface rolling.
Soil 2nd rate.

——West on 252nd Mile——

Variation 14° 03′ East.

13.00 Leave sage brush prairie, bears South.
15.00 Enter scattering 2nd rate scrub, Pine and Cedar timber with thick undergrowth of sage, oak and other brush, bears South and ascend hill.
80.00 Offset from tangent to Parallel, to 252nd mile corner. Marked stone 12 x 6 x 4. -252M- and deposited it 3½ feet

CHAINS

in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26 x 8 x 7, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -252M-.
No natural objects near.
Surface mountainous and stony, covered with a thick undergrowth of scrub Pine and Cedar brush. Soil 3d rate.
Oct. 11th. Measuring chain compared with standard and found correct.

——West on 253d Mile——

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel, to 253d mile corner. Marked stone 10 x 6 x 3 -253M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -253M- respectively.

From which point a
½ conical peak, bears N 4 W, 25 miles dist.
Surface mountainous, covered with scrub Pine and Cedar timber.
Soil 3d rate.

——West on 254th Mile——

Variation 14° 03′ East.

59.00 Canon, 50 lks. wide, 800 feet deep, bears NW.

80.00 Offset from tangent to Parallel to 254th mile corner. Marked stone 16 x 6 x 4 -254M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 8, projecting 8 in. above mound, marked on the North, South, East and West sides -C- -NM- -254M- -1868- respectively.
No natural objects near.
Surface mountainous covered with thick brush.
Soil 3d rate.

——West on 255th Mile——

Variation 14° 03′ East.

67.00 Perpendicular sand stone bluff, 70 feet high, bears NW.

78.00 Enter valley, bears NE.

CHAINS

80.00 Offset from tangent to Parallel to 255th mile corner. Marked stone 6 x 4 x 3 -255M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -255M- respectively.
No natural objects near.
Surface mountainous, covered with scrub, pinion Pine and Cedar brush.
Soil 3d rate.

——West on 256th Mile——

Variation 14° 03' East.

77.50 Creek, 15 lks. wide, very little water, course S S W.

80.00 Offset from tangent to Parallel to 256th mile corner. Marked stone 4 x 3 x 2 -256M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set sand stone 30 x 12 x 4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -256M- respectively.
No natural objects near.
Surface rolling, mostly covered with sage brush.
Soil 3d rate.

——West on 257th Mile——

Variation 14° 03' East.

2.00 Enter scrub Pine and Cedar timber and leave valley, bears SW.

65.00 Creek, 10 lks. wide, very little water, high banks, gravelly bottom, course S S W.

80.00 Offset from tangent to Parallel, to 257th mile corner. Marked stone 8 x 6 x 4 -257M- and deposited it 3½ feet in earth. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 10 x 10 projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -257M-.
No natural objects near.
Surface broken and stony covered with scrub cedar, pine and oak timber and sage brush.
Soil 3d rate.

CHAINS

Oct. 12th Measuring chain compared with standard and found correct

——West on 258th Mile——

Variation 14° 03′ East.

6.00 Top of sand stone bluff, bears South

10.50 Creek, 20 lks. wide, very little water, high banks, gravelly bottom, course South

16.00 Top of sand stone bluff, on West side of Creek, bears South.

80.00 Offset from tangent to Parallel to 258th mile corner. Marked stone 6 x 5 x 4 -258M- and deposited it 3½ feet in earth Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep Set sand stone 28 x 12 x 12, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -258M- respectively. No natural objects near.

Surface broken and stony, covered with scrub Pine and timber

Soil 3d rate.

——West on 259th Mile——

Variation 14° 03′ East.

1.00 Perpendicular sand stone bluff, 15 feet high, bears SSW

3.00 Creek, 8 lks. wide, clear water, rapid current, sandy bottom, course E S E.

25.00 Leave valley, about 3 chs. wide, bears SE and East.

80.00 Offset from tangent to Parallel to 259th mile corner. A sand stone 6 x 5 x 4 feet, projecting 2 feet above ground, marked on the North, South, West and East sides -C- -NM- -1868- -259M- and on top + respectively.

No mound, no pits and no natural objects near.

Surface broken

Soil 2nd rate.

——West on 260th Mile——

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel to 260th mile corner. Marked stone 6 x 6 x 3 -260M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 5, projecting 8 in. above mound, marked on the North, South,

CHAINS

West and East sides -C- -NM- -1868- -260M- respectively.
No natural objects near
Surface broken, covered with scrub pinion Pine and Cedar brush
Soil 3d rate

——West on 261st Mile——

Variation 14° 03' East

80.00 Offset from tangent to Parallel to 261st mile corner. Marked stone 8 x 6 x 4 -261M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set chafred Cedar post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -261M- respectively.
No natural objects near
Surface broken, covered with pinion Pine and cedar timber.
Soil 3d rate.

——West on 262nd Mile——

Variation 14° 04' East

38.00 Valley, 1 chain wide, bears S. S. W.

80.00 Offset from tangent to Parallel to 262nd mile corner, which is identified by a sand stone 8 feet square, projecting 2 feet above earth, marked on the North, South, West and East sides -C- -NM- -1868- -262M- respectively.
No mounds, No pits, No natural objects near.
Surface broken, covered with pinion Pine timber and brush.
Soil 3d rate.
Oct. 12th. Measuring chain compared with standard and found correct.

——West on 263 Mile——

Variation 14° 04' East.

80.00 Offset from tangent to Parallel, to 263d mile corner. Marked stone 8 x 6 x 3 -263M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 15 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -263M- respectively.
No natural objects near.

CHAINS

Surface broken.
Soil 3d rate.

——West on 264th Mile——

Variation 14° 03' East.

20.00 Top of high ridge and enter canon, bears N N E.

37.00 Leave canon, bears N W.

80.00 Offset from tangent to Parallel, to 264th mile corner Marked stone 6 x 4 x 4 -264M- and deposited at 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks East and West from base of mound 2 feet square and 18 in. deep. Set sand stone 40 x 12 x 8 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -264M- respectively. Soil 3d rate.

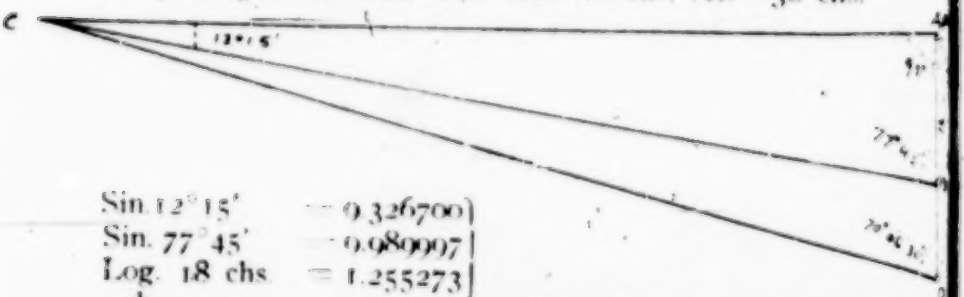
No natural objects near.

Surface mountainous, covered with pinion pine and Cedar brush.

——West on 265th Mile——

Variation 14° 03' East.

65.00 To perpendicular bluff, 50 feet high, bears South. A deep canon, directly West. It being impossible to measure with chain on line, I set flag in valley on line and one on top of bluff, and from flag in valley, I found the triangle ABC and ADC, with measured angles A=90, B=77.45, D=70.06.30, measured sides AB=18 chs. AD=30 chs.



Sin. 12° 15'	= 9.326700
Sin. 77° 45'	= 0.989997
Log. 18 chs	= 1.255273
chs.	
82.90 lks	1.918570
chs.	
Mean 82.90½ lks.	

Sin. 19° 53' 30"	= 9.531780
Sin. 70° 06' 30"	= 0.973284
Log. 30 chs.	= 1.477121
Chs.	
82.91 lks.	1.918616

Impossible to establish 265th mile corner on account of nearly perpendicular bluff.

Oct. 13th. Measuring chain compared with standard and found correct.

CHAINS

——West on 266th Mile——

Variation 14° 03′ East.

In order to determine the Point, where the line crossed the Rio los Animas East from point A or 67.00 chs. West on 266th mile.

2.00 Indian trail bears South.

9.00 Enter low bottom, bears S S W.

16.00 Rio los Animas, 3 chs. wide, about 2½ feet deep, clear water, rapid current, about 6 miles per hour, stony bottom, banks on East side low, course S S E, general course South.

67.75 Offset from tangent 4.10 chs. to Parallel at Astronomical Monument No. 9 which is represented by a sand stone 2½x3 feet, projecting 3 feet above earth, marked on the North "Colorado" South "New Mexico" West "1868" East "37 XL" and over top of stone there is a deep cross, cut with a chisel. Dug pits on the North, South, East and West sides.

From which

Conical Peak bears N 13½ E. about 1½ M dist.

Point of perpendicular sand stone bluff down Rio Los Animas, bears S 7 E, 3 M dist.

Animas valley bears S 2 W.

Observation for Asimuth Oct. 15th A. M. on d Ursae Minoris R.A. 18h 14m 49.8s DEC 86° 36′ 44″ and 51 Cephei R.A. 6h 38m 10.3s Dec. 87° 14′ 08″.7. Chronometer fast at mean noon on Solar time 5h 45m 39s with a loosing rate of 1.16 per day.

	h	m	s
Chron. time of Obs. 'n of d Ursae Minoris AM lower transit	10	24	32
Chron. time of Obs. 'n of 51 Cephei. upper transit	10	47	49
Chronometer interval		23	17
Chronometer rate			0.3
Reduction to Sidereal time			3.8
Sidereal interval		20	21.1

CHAINS

Interval of time between upper and lower transit) 23. 29.5 / 8.4

—Computation—

s

$\Delta = 8.$ $4 \times 15 = 126$ Log.

—	= 2.10037	
Cos. d 86° 36′ 44″	= 8.77300	
Cos. d 87° 14′ 08″	= 8.68366	Va. 14° 04′ East.
Sec. ø 37°	= 0.09765	
Cosec. 6°09′	= 0.96982	
Error of Asimuth 4″.2 East.	0.62450	

West from Astronomical monument No. 9 on 266th mile, which is 67.75 lks. West of place for 265th mile corner. Va. 14° 04′ East.

1.00 Bluff, bears North and South.

6.00 Top of bluff, bears South.

13.25 Offset from tangent to Parallel, to 266th mile corner. Marked stone 6 x 5 x 4 -266M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 8 x 4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -266M- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 267th Mile——

Variation 14° 04′ East.

20.00 Foot of high ridge, bears South.

45.00 Top of ridge, bears S S E.

80.00 Offset from tangent to Parallel to 267th mile corner. Marked stone 6 x 4 x 4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 8, projecting 8 in. about mound, marked on the North -C- South -NM- West -1868- East -267M-.
No natural objects near.
Surface broken.
Soil 3d rate.

CHAINS

——West on 268th Mile——

Variation 14° 04' East.

38.50 Dry bed of Creek, 20 lks. wide, sandy bottom, course NNW'. A perpendicular sand stone rock, a little South of line, from underneath flows a spring of pure water, which sinks again in the sand.

49.00 Perpendicular sand stone bluff, bears South.

80.00 Offset from tangent to Parallel, to 268th mile corner. Marked stone 5 x 5 x 4 -268M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -268M- respectively. No natural objects near.
Surface broken, covered with scrub cedar and pine timber and oak brush.
Soil 3d rate.
Oct. 14th. Measuring chain compared with standard and found correct.

——West on 269th Mile——

Variation 14° 04' East.

11.00 Top of bluff 50 feet high and leave timber bears South.

20.00 Dry bed of Creek, 20 lks. wide, sandy bottom, course S S E.

48.00 Enter scrub Pine timber, bears South.

80.00 Offset from tangent to Parallel, to 269th mile corner. Marked stone 8 x 4 x 3 -269M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -269M- respectively. No natural objects near.
Surface broken.
Soil 3d rate.

——West on 270th Mile——

Variation 14° 04' East.

30.50 Top of ridge bears South.
Conical Peak, bears N 67.16 W
A ½ conical peak bears N 23 E.

80.00 Offset from tangent to Parallel to 270th mile corner. Marked stone 5 x 5 x 4 -270M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

CHAINS

same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 16 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -270M-.
No natural objects near.
Surface broken, covered with scrub Pine and Cedar timber.
Soil 3d rate.

——West on 271st Mile——

Variation 14° 04' East.

80.00 Offset from tangent to Parallel to 271st mile corner. Marked stone 4 x 4 x 3 -271M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -271M- respectively.
No natural objects near.
Surface broken, covered with scrub pinion Pine and cedar timber and thick Oak and Sage Brush
Soil 3d.

——West on 272nd Mile——

Variation 14° 04' East.

80.00 Offset from tangent to Parallel, to 272nd mile corner. Marked stone 4 x 4 x 3 -272M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18 x 8 x 3, projecting 6 in. above mound, marked on the North -C- South -NM- West -1868- East -272M- respectfully.
No natural objects near.
Surface broken, covered with scrub pine and Cedar timber.
Soil 3d rate.

——West on 273d Mile——

Variation 14° 04' East.

80.00 Offset, from tangent to Parallel, to 273d mile corner Marked stone 5 x 4 x 4 -273M- and deposited it 3½ feet in earth, Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the

CHAINS

North, South, West and East sides -C- -NM- -1868- -273M- respectively.
No natural objects near.

——West on 274th Mile——

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel to 274th mile corner. Marked stone 5 x 4 x 3 -274M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -274M-.
From which point
West peak of mountain bears N 8 W.
Conical peak, bears N 60 E.
Surface broken, covered with 3d rate, cedar and Pine timber.
Soil 2nd rate.
Oct. 15th. Measuring chain compared with standard and found correct.

——West on 275th Mile——

Variation 14° 04′ East.

39.00 Perpendicular sand stone bluff, about 20 feet high, bears S S E.

80.00 Offset from tangent to Parallel to 275th mile corner, which is represented by a cedar tree, 10 in. dia. barked square etc. marked on the North, South, West and East sides -C- -NM- -1868- 275M respectively.
No natural objects near.
Surface broken, covered with scrub cedar and Pine timber.
Soil 3d rate.

——West on 276th Mile——

Variation 14° 04′ East.

10.00 Leave Cedar and Pine timber and enter sage brush prairie, bears N N W.

80.00 Offset from tangent to Parallel to 276th mile corner. Deposited charred block 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar 8 feet long and 6 in. square, beveled at

CHAINS.

the top, 3 feet in ground, propecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -276M-.
No natural objects near.
Surface gently rolling Prairie.
Soil 3d rate.

——West on 277th Mile——

Variation 14° 04' East.

0.15 Indian trail, bears W S W.

10.00 Enter scattering 3d rate cedar and pine timber, bears W N W.

80.00 Offset from tangent to Parallel, to 277th mile corner. Deposited charred block 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -277M-.
From which point a
Mountain Peak, bears N 3 W.
Small Peak near Rio la Platte, bears N 60 W.
Surface rolling.
Soil 2nd rate.

——West on 278th Mile——

Variation 14° 04' East.

30.00 Leave scattering 2nd rate Cedar and Pine timber and enter sage brush prairie, bears NNW and SE.

80.00 Offset from tangent to Parallel, to 278th mile corner. Marked stone 6 x 5 x 2 -278M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 12 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -278M-.
No natural objects near.
Surface broken.
Soil 2d rate.

——West on 279th Mile——

Variation 14° 04' East.

5.00 Top of ridge, bears SW.

CHAINS

41.80 Large sand stone boulder on top of ridge 30 feet square and 10 feet high.

69.10 Indian trail, bears N N E.

80.00 Offset from tangent to Parallel to 279th mile corner. Marked stone 6 x 4 x 4 -279M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 16 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 8 x 8, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -279M-.
No natural objects near.
Surface broken, mostly covered with scrub Pine and Cedar timber.
Soil 3d rate.

——West on 280th Mile——

Variation 14° 04′ East.

12.00 Dry bed of Creek, 50 lks. wide, sandy bed, course W S W. Note: A bed of bituminous coal crops out on each side of Creek about 4 feet thick.

28.00 Top of sand stone bluff, 70 feet high, bears E S E.

35.00 Creek, 40 lks. wide (alkali) about ½ in. deep, sandy bottom, course S S E.

37.00 Leave valley, and ascend hill, bears SE.

80.00 Offset from tangent to Parallel to 280th mile corner, which is identified by a large sand stone, 4 feet square and 18 in. high, marked on the North -C- South -NM- West -1868- East -280M-.
No natural objects near.
Surface broken, covered with scrub cedar and pine timber.
Soil 3d rate.

——West on 281st Mile——

Variation 14° 04′ East.

2.00 Large beds of bituminous coal, from appearance it indicates a vein 30 feet thick, and coal is exposed over a space of about 80 acres.

50.00 Sand stone bluff about 200 feet high bears South.

55.00 Enter valley, bears South.

64.60 Dry bed of Creek, 60 lks. wide, sandy bottom, high banks, course S S E.

73.00 Dry bed of creek, 50 lks. wide, cut into valley about 10 feet, muddy bottom, course SE.

80.00 Offset from tangent to Parallel to 281st mile corner.

CHAINS

Marked stone 6 x 6 x 4 -281M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 12 x 6, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -281M.

From which point a
Point of sand stone bluff, bears N 35 E.
Point of sand stone bluff, bears N 30 E.
Mountains, bears N 5 E.
Surface broken, on the hills nothing but gravel.
Soil 3d rate.
Oct. 16th. Measuring chain compared with standard and found correct.

——West on 282nd Mile——

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel, to 282nd mile corner, on side of hill, which descends to the North. Marked stone 8 x 6 x 3 -282M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 34 x 14 x 12, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -282M-.
No natural objects near.
Surface broken, covered with scrub Pine and cedar timber.
Soil 3d rate.

——West on 283d Mile——

Variation 14° 04′ East.

40.00 Leave scattering Pine and Cedar timber and enter sage brush prairie, bears South.

71.24 Indian trail, bears S S W..

80.00 Offset from tangent to Parallel to 283d mile corner on top of ridge. Marked stone 5 x 5 x 4 -283M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -283M-.
No natural objects near.
Surface rolling.
Soil 2nd rate.

CHAINS

——West on 284th Mile——

Variation 14° 04′ East.

10.00 Enter valley, bears South.

19.50 Indian trail, bears South.

27.25 Rio la Platte, 50 lks. wide, clear water, 24 in. deep, rapid current, gravelly and rocky bottom, course South.

65.00 Indian trail, bears South.

66.00 Leave valley, bears South

West Peak, Sierra la Platte, bears N 8½ E.

Snowy Peak, bears N 12.35 E.

Peak, bears N 19¾ E.

½ conical peak, bears N 35 E.

Canon, where trail comes down bears N 13½ E.

Rio la Platte valley, bears S 16½ E.

80.00 Offset from tangent to Parallel, to 284th mile corner. Marked stone 5 x 5 x 2 -284M- and deposited it 3½ feet in earth. Built conical mound of earth; 4 feet high, over same. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -NM- West 1868- East -284M-.

No natural objects near.

Surface gently rolling.

Soil 2nd rate.

——West on 285th Mile——

Variation 14° 04′ East.

10.00 Dry bed of Creek, 100 lks. wide, stony bottom, course SE.

16.50 Leave valley, and enter scrub Pine and Cedar timber, bears SE.

80.00 Offset from tangent to Parallel, to 285th mile corner. Marked stone 8 x 6 x 4 -285M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 8, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -285M-.

No natural objects near.

Surface broken, mostly covered with 3d rate Pine and Cedar timber and sand stone rock.

Soil 3d rate.

——West on 286th Mile——

Variation 14° 04′ East.

CHAINS

60.00 Canon, bears SE. Set flag on opposite side of canon, formed the right angle triangle ABC measured the angles A=90 B=71.28 Side AB= 6 chs.

Sin. 17°32′	= 9.478942
Sin. 71°28′	= 9.979340
Log. 6 chs.	= 0.778151
Distance 18 chs. 96 lks.	1.278549

78.96 Leave canon, bears SE.

80.00 Offset from tangent to Parallel, to 286th mile corner, on point West of canon, 50 feet deep, on a flat sand stone, marked 286M. Built conical mound of stone 4 feet high, over same. Set sand stone 30 x 12 x 10, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -286M-.

No natural objects near.

Surface broken.

Soil 1st half sand stone rock.

2nd half 3d rate.

Oct. 17th. Measuring chain compared with standard and found correct.

——West on 287th Mile——

Variation 14° 04′ East.

30.00 Canon 600 feet deep, bears SE. It being impossible to measure line with chain over canon, I set flag on west side of canon, thence North 3 chs. I formed the triangle ABC with the measured angles A=90 B=59.02. Side AB=3 chs. hence we have the formula.

Sin. 18°26′	= 9.499963
Sin. 71°34′	= 9.977125
Log. 3 chs.	= 0.477121
Distance 9 chs.	0.954283

Perpendicular sand stone bluff on each side.

39.00 Leave canon, bears SE.

80.00 Offset from tangent to Parallel, to 287th mile corner. Marked stone 5 x 4 x 2 -287M- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 10 x 10, projecting 6 in. above mound, marked on

CHAINS

the North -C- South -NM- West -1868- East -287M-.
No natural objects near.
Surface broken
Soil 3d rate.

——West on 288th Mile——

Variation 14° 04′ East.

29.00 Deep canon 200 feet deep, bears S S E.
It being impossible to measure with chain on line, I set flag on West side of canon, on line, thence North 2 chs. flag bears South.

Sin. 26° 34′	=	9.650539
Sin. 63° 26′	=	9.951539
Log. 2 chs.	=	0.301030
4 chs.		0.602030

33.00 Leave canon, bears S S E.

40.00 Canon, 250 feet deep, bears SW.
It being impossible to measure with chain on line, I set flag on West side of canon, thence North 250 lks. flag bears S 63° 26′ E.

Sin. 26° 34′	=	9.650539
Sin. 63° 26′	=	9.951539
Log. 250 lks.	=	0.397940
5 chs.		0.698940

45.00 Leave canon, having nearly perpendicular sand stone sides, bears SW.

80.00 Offset from tangent to Parallel, to 288th mile corner. Marked stone 5 x 4 x 2 -288M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 8, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -288M-.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 289th Mile——

Variation 14° 05′ East.

13.50 Canon, 600 feet deep, nearly perpendicular sand stone sides, bears SSE. It being impossible to measure distance over canon with chain, I run North, 4 chs. flag bears S. 66° 02′ W.

CHAINS

	Sin. 23 38	= 9.608745
	Sin. 66.02	= 9.960843
	Log. 4 chs.	= 0.602000
	9.00 chs.	0.954158

22.50 Leave canon, bears S S E.

58.00 Canon, bears S S E. It being impossible to measure distance across canon, on line. North 4 chs, flag bears S 67.48 W.

	Sin. 22° 12′	= 9.577309
	Sin. 67° 48′	= 9.966550
	Log. 4 chs.	= 0.602060
	9.82 chs.	0.991301

67.82 Leave canon, 400 feet deep, nearly perpendicular sand stone bluffs, bears S S E.

80.00 Offset from tangent to Parallel, to 289th mile corner. Marked stone 5 x 5 x 4, -289M- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone, 20 x 14 x 10, projecting 6 in. above mound, marked on the North -C- South -NM- West -1868- East -289M-.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 290th Mile——

Variation 14° 05′ East.

35.00 Top of hill bears South. From which point
Hay stack peak, on canon, bears N 17½ W.
A slide on ridge, bears N 4 W.
Conical mountain peak, bears N 53 W.
It being impossible to measure the line with chain, on account of the deep impassible canons, I measure the angle from tangent to the conical mountain peak in the Sierra Latra, which gives an angle of 37° or bears N 53 W. The tangent was commenced at Astronomical Monument No. 9 by turning a right angle from the Asimuth at that point.

M chs. lks.

which is 23. 48. 25 East and the divergency of tangent from Parallel for that distance is 423 lks. South. I then went back to the Rio la Platte, followed it up for a distance of 10 miles; thence West to the Rio los Mancos, and

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down that river to the point where the stream leaves the deep canon, and then made observations for Latitude at Astronomical station near the Rio los Mancos, and found from computation, that that point was 184.92 chs. North of the 37th Parallel. I therefore measured S. 4° 58' W. 185 chs. 55 lks. to the Parallel, and established Astronomical Monument No. 10 which is represented by a sand stone boulder 20 feet wide, 10 feet thick and 10 feet above the surface, marked with a + cut with chisel on the top, where the line would cross the same, and on the North "Colorado" South "New Mexico" West "1868" East "37 NL". Dug pits

From which point a

Large sand stone boulder bears N. 29 W. 130 lks. dist. marked "Colorado" "1868".

Large sand stone boulder bears S. 29 E. 130 lks. dist. marked "New Mexico" "1868", 250 lks. foot of high sand stone bluff, 600 feet high, and from a point just West of Astronomical Monument I took a prominent point on bluff, about 7 miles North, for approximate asimuth, in order to detect any movement of the instrument, while making the following observations for asimuth at astronomical monument N. 10, Oct. 25th, 1868.

Chronometer fast at mean noon, on solar time

h	m	s
5	47	54

with a loosing rate of 2ᵖ per day.

	h	m	s
Time of observations by Chronometer on 51 Cephei, upper transit	10	10	40
Chro. time of observations of d Ursae Minoris	10	43	57
Chronometer interval		23	17
Chronometer rate			00.3
Reduction to Sidereal time			03.8
Sidereal interval		23	21.1
Interval between upper and lower transit		23	25.9
			48

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		h	m	s			
d Ursae Minoris	R.A.	18.	14.	33.1	Dec. 86°	36′	42″.2
		h	m	s			
51 Cephei	R.A.	6.	38.	09.	Dec. 87°	14′	03″.5

Δ4M 8 x 15 = 72	Log 1.857331	
Cos d 86° 36′ 42″	8.773000	
Cos d 87° 14′ 03″	8.683306	Variation 14°07′ East.
Sec. ∅ 37°	0.097765	
Cosec 6°00′	0.096982	
West of true azimuth 33 s	0.381460	

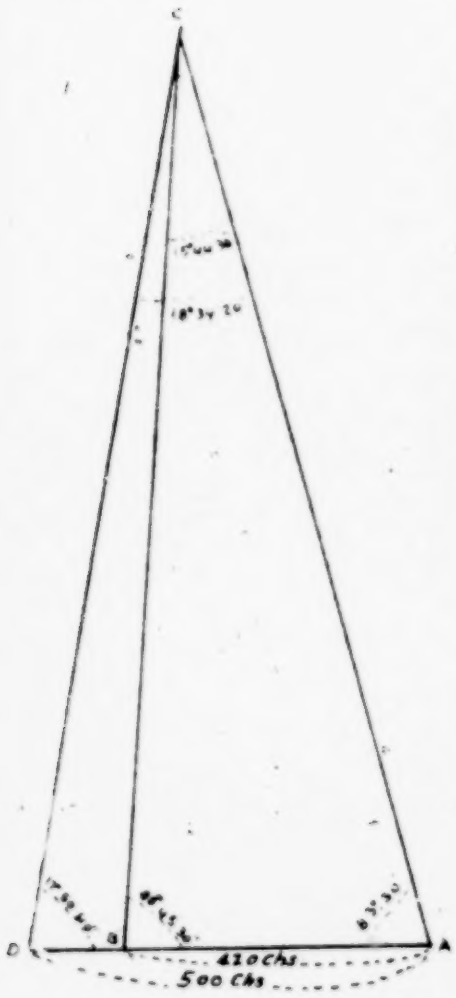
In order to determine the distance—this point which is 191 lks. West of Astronomical Monument No. 10 to the point on tangent, 35 chs. West of the 289th mile corner, where the bearing was taken to the mountain peak in the Sierra Latra, I took the following bearing, and carefully measured the following distances. The same Peak bears N. 6.30 W. I measured West on tangent 420 chs. The above mentioned Peak bears N. 9° 14′ 30″ E. and at 500 chs. the Peak bears N. 12°09′20″ E.

Therefore I have the following triangles ABC — ADC, with the common side AC, and the common measured angle A=83°30′, the measured angle B=80.45.30, D=77.50.20, side AB=420 chs, AD=500 chs. The following statements are made to find the common sides AC, as C is to B, so is AB to AC.

Sin. 15°44′30″	= 9.4334505	Sin. 18.39.20	= 9.5049846
Sin. 80°45′30″	= 9.9943258	Sin. 77.50.40	= 9.9901521
Log. 420 chs	= 2.6288587	Log. 566.58 chs	= 2.7046480
Chs. Lks.		Chs. Lks.	
15.47.87	3.1897340	15.48.16	3.1898190

triangle ABC, side AC=1547 chs. 87 lks.; from triangle ADC, side AC=1548 chs. 16 lks. therefore the mean

CHAINS



will be 1548 chs. 01 lks. side AC.

In order to compute the distance from the point at A we have to compute the distance, that the tangent commenced at, at the Astronomical Monument No. 9, would be South of the point A in the triangle, and we will assume the distance to be 47 miles and 30 chs. If the tangent had been extended west that distance it would have been South 1705 lks. and if the tangent running at right angles from the point A in triangle a distance of 23 M. 62 chs. it would have been South of the Parallel 4.29 lks. therefore making the two tangents if started from the same point and extended the distance of 23 M 62 chs. a distance of 17 chs. 11 lks, apart, making a change of 38' 08" in course. Therefore if the course had been taken to the mountain Peak, assuming the same tangent that was used in the first bearings, the course would have been 6° 30' — 30' 08" = 5° 59' 52", or N. 5° 59' 52" W. and assuming the point S. 5° 59' 52" E. 17 chs. 20 lks. to the tangent, projecting from the Astronomical Monument No. 9, we have the triangle A. B. C. the point B = 35 chs. on 290th mile. Point C a conical Peak in Sierra Latra Mountains that can be seen from nearly all points as it tapers to a small cone at the top Point A in San Juan valley. Measured angles B = 37°, A = 95° 59' 52". Hence angle C = 47° 00.08, Side AC = 1565 chs. 21 lks. I have the angle B: C: AC:

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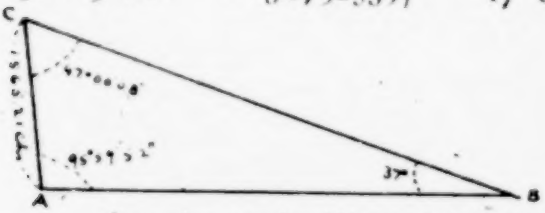
Sin. 37	= 9.7794630	AB. hence we have the side AB=
Sin. 47 00'08"	= 9.8641432	19.02 chs. 19 lks. = 23 M. 63 chs.
Log. 15.65.21	= 3.1945737	19 lks. + 180 for the departure. West in a course N6W=
1902.19 chs.	= 3.2792539	17 chs. 20 lks. from tangent to Parallel 23 M. 63 chs. 09 lks. - 190 lks. distance West of Astronomical Monument, makes a distance of 23 M. 62 chs. 09 lks. from



the point 35 chs. West of the 289th mile corner, or 23 M. 62 chs. 09 lks. + 289 M. 35 chs. = 313 M. 17 chs. 09 lks. to Astronomical Monument No. 10 in San Juan valley. The country — the subject of this triangulation is very broken, cut up with deep canons, covered with scrub Pine and Cedar timber. The soil is coarse gravel, and no vegetation exists except cactus and soap weed.

——West on 314th Mile——

Variation 14° 07' East.

from Astronomical monument which is 17.08 lks. West of place for 313th mile corner.

62.92 Offset from tangent to Parallel to 314th mile corner. Marked stone 3 x 3 x 3 -314M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -314M- respectively.

No natural objects near.

Surface nearly level Prairie.

Soil 3d rate.

——West on 315th Mile——

Variation 14° East.

80.00 Offset from tangent to Parallel, to 315 mile corner. Marked stone 5 x 5 x 4 -315M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long, and 6 in square, beveled at the top, 3 feet in the

CHAINS

ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -315M-.
No natural objects near.
Surface gently rolling prairie.
Soil 2nd rate.

——West on 316th Mile——

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel to 316th mile corner. Deposited charred block, 6 in. square, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -316M- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 2nd rate.

——West on 317th Mile——

Variation 14° 06′ East.

20.00 Indian trail bears North.

80.00 Offset from tangent to Parallel to 317th mile corner. Marked sand stone 6 x 4 x 3 -317M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -317M-.
No natural objects near.
Surface gently rolling, Prairie.
Soil 3d rate.

——West on 318th Mile——

Variation 14° 06′ East.

80.00 Offset from tangent to Parallel to 318th mile corner. Marked stone 7 x 5 x 4 -318M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South,

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West and East sides -C- -NM- -1868- -318M- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 3d rate.

——West on 319th Mile——

Variation 14° 06′ East.

74.00 Dry bed of Creek, 75 lks. wide, sandy and gravelly bottom, high banks, course W N W.

80.00 Offset from tangent to Parallel to 319th mile corner. Marked stone 8 x 6 x 3 -319M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set slate stone 36 x 16 x 4, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -319M-.
No natural objects near.
Surface gently rolling.
Soil 3d rate.

——West on 320th Mile——

Variation 14° 06′ East.

80.00 Offset from tangent to Parallel, to 320th mile corner. Marked stone 10 x 6 x 3 -320M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 14 x 6, projecting 8 in. above mound, marked on the North -C- South -NM- West -1868- East -320M-.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 321st Mile——

Variation 14° 06′ East.

80.00 Offset from tangent to Parallel to 321st mile corner. Marked stone 5 x 5 x 4, -321M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set sand stone 30 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -321M- respectively.

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No natural objects near.
Surface broken.
Soil 3d rate.

——West on 322nd Mile——

Variation 14° 06′ East.

12.00 I took the following bearings:
Mountains on West side of Rio Colorado bears N 51 W.
West end of mountains bears N 33 W.
Abutment, bears N 59 E.
Perpendicular cliff, bears S 75½ E.
Perpendicular cliff, bears S 72½ E.
Isolated body of rock and earth, having the appearance of a large Cathedral, bears S 7 E.
Conical Peak, on East end of Tunichi mountains bears S 10 W.
Conical Peak, on Tunichi mountains bears S 13½ W.
Highest Point of mountain range, bears S 52½ W.
Conical Peak on Sierra La Platte bears N 37 E.

68.00 Dry bed of Creek, about 50 lks. wide, sandy bottom, course NW.

76.00 Conical mound, about 40 feet high, on line.

80.00 Offset from tangent to Parallel to 322nd mile corner. Marked stone 6 x 4 x 3 -322M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 16 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 10 x 4, projecting 6 in. above mound, marked on the North, South, East and West sides -C- -NM- -1868- -322M- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 323d Mile——

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel to 323d mile corner. Marked stone 10 x 6 x 3 -323M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in deep. Set sand stone 20 x 14 x 3, projecting 4 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -323M- respectively.

CHAINS

No natural objects near.
Surface broken.
Soil 3d rate.

——West on 324th Mile——

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel, to 324th mile corner. Marked stone 10 x 6 x 3 -324M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 10 x 4, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -324M- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 325th Mile——

Variation 14° 07′ East.

51.90 Enter valley of the Mancos, subject to overflow, bears SW.

52.50 Rio los Mancos, 70 lks. wide, clear water, 2½ feet deep, gentle current, sandy bottom, high banks, filled with beaver dams, course SW.

57.50 Leave valley, high banks, bears South.

58.50 Top of bluff.
Ruins of an old stone house, about 450 lks. South.

80.00 Offset from tangent to Parallel to 325th mile corner. Marked stone 6 x 5 x 3, -325M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 10 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -325M- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 326th Mile——

Variation 14° 44′ East.

80.00 Offset from tangent to Parallel, to 326th mile corner. Marked stone 8 x 4 x 3 -326M- and deposited it 3½ feet

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in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -326M- respectively.
No natural objects near.
Surface gently rolling, prairie.
Soil 3d.

——West on 327th Mile——

Variation 14° 07′ East.

25.80 Indian trail, bears South.

39.00 Canon, bears SW and South.
NOTE: A Vein of bituminous coal crops out on each side from 6 to 10 feet in thickness.

47.00 Leave canon, 200 feet deep, bears South.

70.00 Canon, 300 feet deep, bears West.

80.00 Place for 327th mile corner in canon on south side of hill, and impossible to establish corner.
No natural objects near.
Surface broken.
Soil 3d rate.

——West on 328th Mile——

Variation 14° 07′ East.

10.00 Leave canon, bears West and enter San Juan valley, bears W N W.

72.50 Rio San Juan, water little muddy, 3½ feet deep, rapid current, gravelly bottom, banks low, course North. Set flag on opposite bank of river thence North 200 lks. flag bears S. 66° 02′ W. distance over river 4.50 chs.

77.00 Over same, high banks, 10 feet high, course North.

80.00 Offset from tangent to Parallel to 328th mile corner. Marked stone 10 x 6 x 3 -328M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides - -C- -NM- -1868- -328M- respectively.
No natural objects near.
Surface level.
Soil 2nd rate.

CHAINS

——West on 329th Mile——

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel to 329 mile corner. Marked stone 8 x 6 x 4 -329M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 6 x 5, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -229M- respectively.

Surface nearly level.

Soil 2nd rate.

——West on 330th mile——

Variation 14° 07′ East.

2.50 Bend in Rio San Juan, course W S W, muddy water, 5 feet deep, rapid current, high banks.

Sand bar in river, but North of line.

12.40 Over bend in river, high banks course NW.

30.00 Leave valley of San Juan, bears North.

80.00 Offset from tangent to Parallel to 330th mile corner. Marked stone 5 x 3 x 4 -330M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set sand stone 26 x 12 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -330M- respectively.

No natural objects near.

Surface gently rolling, last 50 chs. broken.

Soil 2nd rate.

——West on 331st mile——

Variation 14° 07′ East.

38.40 Dry bed of Creek, sandy bottom, course NW.

50.00 Leave dry bed of Creek, low banks, course NW and West.

80.00 Offset from tangent to Parallel to 331st mile corner. Marked stone 8 x 6 x 4 -331M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -331M- respectively.

No natural objects near.

Surface broken.

Soil 3d rate.

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——West on 332nd Mile——

Variation 14° 07′ East.

60.00 To 109° of West Longitude from Greenwich, according to Astronomical observation and computations made for Longitude near the 37th Parallel of North Latitude, and the observations made for Latitude.

I established Astronomical Monument No. 11 at this point for the corner stone to the Territories of Colorado, New Mexico, Arizona and Utah.

Deposited a sand stone 12 x 10 x 8, 3 feet in earth, engraved with a chisel 109° WL - NM - C - A - 1868. Set a sand stone 5 feet 10 in. in length by 18 x 10 in. 2½ feet in earth, durably engraved with a chisel on the NE "Colorado" -331M- -60 chs- on the SE "New Mexico" "37NL", on the SW "Arizona" "1868", on the NW "Utah" "109 WL".

Built a circular mound of cobble stone, 7 feet at base, 3 feet high. Dug 4 pits on the North, South, East and West sides, 6 feet from base, 2 feet square and 18 in. deep.

The monument is situated on the high land, near a ridge that can be seen for some distance from the East and about 1½ miles from the Rio San Juan.

-BEARINGS-

South point of ridge, bears N 87° W.
North point of Ridge, bears N 05 W.
Highest Peak on Sierra Latra bears N 40½ E.
Lone column of rock on same range, bears N 44 E.
Lone column of rock on same range, East of same bears N 48½ E.

Point of Bluff, on East side of valley, bears N 55 E. about 30 miles dist.
North point of high plateau bears N 82 E.
South point of high plateau, bears S 88½ E.
South point of high ridge, bears S 83¾ E.
Conical peak in Sierra Latra bears S 16½ W.
Conical Peak in Sierra Latra bears S 23 W.

We hereby certify, that we assisted Ehud N. Darling, Surveyor and Astronomer, in surveying the North boundary of New Mexico, which is the 37 Parallel of North Latitude, between the 103° and the 109° of West Longitude from Greenwich. That said line (aforesaid) has been in all respects to the best of our knowledge and belief, well and faithfully surveyed, and the monuments planted

CHAINS

according to the instructions furnished by the Commissioner of the Genl. Land Office.

(Signed) JNO. E. McMANUS
(Signed) NORTH A. HAIGHT } Chainmen
(Signed) ROBERT DARLING
(Signed) SAMUEL MEYERS } Cornermen
(Signed) OTTO MANGOLD
(Signed) JOHN E. JONES
(Signed) JOEL B. DURNALL } Flagmen.

Subscribe and sworn to before me, a Notary Public, for the County of Douglass, City of Lawrence, Kansas, this 4th December, 1868.

(Signed) W. A. Simpson
Notary Public
Douglas, Kansas.

(SEAL)

I, Ehud N. Darling, do solemnly swear, that in pursuance of a contract with the Hon. Jos. S. Wilson, Commissioner of the General Land Office of the U. S. in Washington, bearing date the 22nd day of May, 1868, and in strict conformity to the laws of the United States, and the instructions furnished by the said Commissioner, I have faithfully surveyed the 37th Parallel of North Latitude, so far as it constitutes the North boundary of New Mexico, from the 103° to 109° of West Longitude from Greenwich, and I do further solemnly swear, that the foregoing are the true and original field notes of such survey.

(Signed) Ehud N. Darling
U. S. Surveyor and Astronomer.

Subscribed by said Ehud N. Darling, U. S. Surveyor and Astronomer, and sworn to, before me, a Justice of the Peace for the city and county of Washington, this 13th day of April, 1869.

(Signed) T. C. Connolly, J. P.

CHAINS

DEPARTMENT OF THE INTERIOR
GENERAL LAND OFFICE
April 30, 1869.

The foregoing field notes of the survey of the Northern boundary of New Mexico on the 37th Parallel of North Latitude from the 103d to 109th of Longitude west from Greenwich, executed by Ehud N. Darling, Astronomer and Surveyor, under his contract of May 22, 1868, having been examined, are hereby approved.

(Signed) Jos. S. Wilson
Commissioner.

U. S. Surveyor General's Office,
Denver, Colorado.

I hereby certify this to be a correct copy of the Original field notes on file in this office.

Witness my hand and seal this 6th day of February A. D. 1920.

John B. McGauran
(OFFICIAL SEAL) Surveyor General for Colorado.